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INTRODUCTION

THIS issue of *Aslib Proceedings* contains papers given at the London and Branch meetings of Aslib, reports of recent conferences on the U.D.C. and on standardization in documentation, extracts from the annual report of the National Central Library, and a survey of 1952 literature for special libraries.

The Northern Branch of Aslib organized a full-day conference in Hull on Thursday, 2nd October. Meetings took place in the Guildhall, and the conference was opened by the Lord Mayor, Councillor A. K. Jacobs. The Chairman was the Principal of University College, Kingston-upon-Hull, Mr. J. H. Nicholson. Papers were given by Mr. Leslie Wilson, Director of Aslib ; Dr. G. M. Dyson on the use of Aslib facilities ; Mr. D. J. Foskett on how to start an industrial library ; and Miss Jean Binns on industry and the Public Library in Kingston-upon-Hull. The papers by Mr. Foskett and Miss Binns are included in this issue.

The first of the 1952/53 London Winter Meetings of Aslib was held at Friends' House on 22nd October, when Mr. J. E. L. Farradane, Scientific Information Officer of Tate & Lyle Research Laboratories, spoke on 'The psychology of classification'. The Chair was taken by Mr. R. F. J. Withers, of the Department of Biology, Middlesex Hospital Medical School. Mr. Farradane's paper aimed at giving a fuller explanation of the logical and psychological principles involved in the scientific theory of classification, which he has put forward in two papers recently published in the *Journal of Documentation*. The psychology of classification and, indeed, the psychology of the actual processes of thought, are relatively newly developed subjects, and his paper stimulated a brisk discussion at the meeting. Mr. Farradane is still enthusiastically working on the subject and, although this particular paper is not being published now, we may hope to read the results of his labours on some later occasion.

The second Winter Meeting was held on 19th November, also at the Friends' House, when Mr. B. Agard Evans, Chief Librarian, Ministry Works, listed all the things that he would like to put right if he had way—with publishers. The Chairman was Mr. H. S. Pocock, M.I.E.E., Director of Iliffe & Sons, Ltd., and both the paper and the lively discussion which followed are printed in full in this issue.

Mr. G. A. Lloyd, of the British Standards Institution, attended the conference of the International Federation for Documentation, which was held in Copenhagen from 29th September to 4th October, 1952, and

extensive extracts from his report of the meetings of the International U.D.C. Committee and Sub-committees are printed on pp. 41-53. Besides noting certain developments in classification rules and notation principles, members will be able to learn from these extracts which sections of the Universal Decimal Classification are under active revision.

The F.I.D. conference was directly followed by a meeting of Technical Committee 46 (Documentation) of the International Organization for Standardization (I.S.O.), held in Copenhagen from 6th to 8th October, 1952. Extracts from Mr. Lloyd's unofficial report show the progress that is now being made in the drafting of a number of international standards for various matters which are of direct interest to special librarians. Work on these has been going on since 1948 or earlier, but several are now nearing completion.

For some time it has been felt that so much is now being published on special librarianship and documentation that there is danger that the inexperienced may not be able to see the wood for the trees. A beginning has, therefore, been made on what it is hoped will become an annual feature—Signposts—whereby a selection is made of items likely to be of particular interest to the special librarian or information officer, either as tools for day-to-day work or as aids in the furtherance of his own professional training. The Editor knows from experience that no two people ever agree on any such selection, but the very process of disagreeing and of putting forward alternative suggestions is often stimulating and, to that extent at least, beneficial!

E. M. R. DITMAS,
Editor

HOW TO START AN INDUSTRIAL LIBRARY

By D. J. FOSKETT, B.A., F.L.A.

The Metal Box Company, Limited, Research Division

Hull, 2nd October, 1952

DURING the last century, the growth and increasing complexity of our industry has brought about a radical change in the pattern of its development. The improvement of production processes by trial and error, and their control by secrecy, have given way to a conscious application of science and the free exchange of knowledge. The latest evidence of this is the series of reports issued by the teams that have visited the U.S.A. under the auspices of the Anglo-American Productivity Council. Several factors have contributed to this change. Advances leading to greater specialization have produced an enormous accumulation of detailed knowledge in many fields ; yet at the same time, the progress of science shows that no part of Nature exists in isolation : each part penetrates and is penetrated by others. The squandering of natural resources, and the erection of artificial trade barriers, mean that access to raw materials has become more difficult, and substitutes must be sought. Mass production methods mean the breaking-up of a whole production process into unit operations, with the introduction of more and more standardization. Whereas in former times processes were often peculiar to one works and could only be learnt in that works, nowadays a process and a machine developed for one industry often find application in others, since unit operations in a flow line are much more easily interchangeable than complete processes. For example, in printing, straight lines are produced by inking the edges of thin strips of metal or 'rules' ; this process has been borrowed, and sharp rules are used for producing cuts and scores in sheets of cardboard, in the manufacture of folding cardboard boxes.

These developments have combined to lead to the point where, while it is essential to recognize the value of other people's knowledge, it has become almost impossible to engage in research or production and also to read all the new work published, even in a limited field of interest. We are told that this country has lagged behind the U.S.A. in applying science to industry ; indeed, this is frequently given as one of the reasons for their greater productivity. Certainly many more technological papers are published in the U.S.A. ; much of their content is repetitive and of little value, but, none the less, it is probably true to say that more of value is published there than in Great Britain. This may be because, in spite of our growing appreciation of technical literature, there is still less eagerness to publish work here, especially on the part of the factory man, who has little time for writing, and is probably still somewhat inhibited by the tradition of secrecy. This has been overcome in the

U.S., where much of the periodical literature comes from men engaged in production.

Yet this country led the world in the publication of new knowledge. In science, the Royal Society's *Philosophical Transactions* dates from 1665, the *Philosophical Magazine* from 1798, the *Journal of the Chemical Society* from 1841; in applied science, the *Journal of the Institution of Mechanical Engineers* began in 1847, the *Journal of the Royal Society of Arts* in 1852, *The Engineer* in 1856, the *Journal of the Society of Chemical Industry* in 1881. The hesitations of technologists will, no doubt, be overcome in due course, particularly since the great complexity of modern industry now makes it unlikely, in most fields, that publication will lead to direct competition. In any case, where monopoly is desired, an invention must be protected by Letters Patent, which means publication.

It is certain, therefore, that the already marked tendency to attach greater importance to technical literature will grow, and since the present output is so vast that the new *World list of scientific periodicals* contains no less than 50,000 titles, it seems clear that this flood of ideas requires to be brought under control if it is to be put to work with maximum advantage.

Now although few of us are ever actually taught to use books, the fact that we are accustomed from an early age to recreational and cultural reading has brought about the widespread belief that this is a skill with which we are equipped by nature. This is quite wrong, especially where technical books are concerned. Even the idea of 'books' is wrong to-day. Other types of publication, periodicals, pamphlets, patents, trade catalogues, have greater importance for industry. Original work may appear, in all these forms, from universities, societies, government organizations, and industry itself. The outstanding value of periodicals is a reflection of the pattern of scientific and industrial development. Increasing specialization brings more intensive study, greater attention to detail, and smaller units of publication occupying perhaps only a few pages. Much of the value of such work would be lost if the author waited until he had accumulated sufficient material for a complete book. Much of it would never be published. Certainly most of it would have been laboriously repeated by other workers in the same field.

By comparison with these types of publication, the organization and use of a small library of books is simple. The titles are readily visible and usually give a good indication of contents, there are chapter headings and often subject indexes. But periodicals are very much more complicated. The sensible proposal of J. D. Bernal was rejected at the Royal Society Scientific Information Conference without adequate discussion, and there is much duplication and overlapping, with the result that articles on a particular subject may be found, as Bradford (1) showed, scattered through a wide range of journals. The titles of articles are sometimes irrelevant or misleading, while their indexes only appear at the end of a volume—which may be as much as eighteen months after the first issue appears.

Furthermore, the material has to be organized from the point of view

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of the firm itself, requiring intensive study of new work to see whether it is relevant, and this may mean the indexing of an important paragraph or two from an article on some other subject. As an example I may quote an article on the examination of apples, which appeared in the *Journal of Experimental Botany* and contained an interesting modification of the Van Slyke method of gas analysis.

So far, industrial libraries have usually appeared as an ancillary service to a research department. But it cannot be doubted that such services will extend as our industrial civilization advances and it becomes ever more necessary for the line operative himself to develop a skill once again, instead of being condemned to be perpetually no more than a 'cog'. Indeed, I look forward to the day when every factory of any size has its own library, with its librarian playing an active educational role. But at the moment this development is present only in embryo.

It is almost impossible to suggest at what stage it becomes necessary to appoint a librarian. It must be emphasized, however, that such an appointment always brings advantages that cannot be foreseen, because it results in better exploitation of the literature, and, therefore, more intensive use of other people's ideas. The way to go about setting up a library on this scale has been dealt with by many other writers, and recently in considerable detail by E. B. Uvarov (2), so that it is only necessary here to stress the most important points. I believe it to be essential to appoint a person qualified by experience, by professional examination, or preferably by both. The qualifying body, the Library Association, has in recent years made considerable improvements to its syllabus, in particular by including alternative papers covering the literature of science and technology. A chartered librarian who has passed one of these papers may, therefore, be expected to have several years of experience, a considerable knowledge of technical literature, and the ability to organize and take charge of a library or information section.

A second essential is the provision of adequate space. Using the corner of a general office with shelves in the corridors can only result in inefficiency. If the library is to be used to the best advantage, a separate room is required, with a desk, a typewriter, a telephone, a reading table, and at least the use of a duplicator. Uvarov suggests enough shelf space for twice the stock already held, and I am inclined to think that even this is an underestimate. A library, particularly a technical library, with sets of periodicals, grows with utter remorselessness, and all too quickly plays havoc even with an apparently generous allowance.

Finally, the librarian should be given appropriately senior status, as recommended by the Royal Society Conference, and should be allowed to plan the development of the library. A technical skill is being purchased and clearly it should be used to the full. It is unwise and unfair to appoint a librarian and present him with a library badly planned and equipped; he will certainly not obtain the best possible results, but can only make the best of a bad job.

The services that an industrial library may be expected to provide

have also been described in some detail (3). Again to summarize, they consist of three main groups. First, the selection, ordering, recording, and storing of new material. Second, the feeding of new ideas and information to those members of the firm who can make the best use of them. Third, the searching for answers to specific enquiries, which may range over the whole field of knowledge. Thus baldly stated, the job appears simple; but the implications of these duties are inexhaustible. They require a detailed knowledge of sources, close inspection of all incoming material, minute attention to detail so as to compile *infallible* records, an alert and flexible mind able to delve in many fields with equal assurance, and an intimate acquaintance with all the firm's activities and needs.

The method of distributing information depends on the firm's organization. It may be sufficient to despatch each item to the right reader as it appears, and with commercial information, where urgency is a prime requisite, it is probably best to rely on telephone or messenger. But the number of readers may be too great to make such a service practicable for the small library, and then the circulation of a bulletin of additions to the library, titles of new periodical articles, or abstracts, is usually undertaken. 'Abstracts' are a well-known phenomenon, and I need do no more than stress that, like the indexes, they should be produced with the interests of the readers in mind.

But I believe that it would be an unrealistic approach to this Conference to confine myself to the library that is established as a full-time department with a librarian in charge. Most of the industrial firms in this country are not big enough to establish such a library. Yet they need technical information even more than the big concerns, because the private supply of experts is likely to be limited. Many of them have small collections that are not fully exploited because nobody has been made responsible for ensuring that they are so, with the result that the information is obtained only with difficulty. Where no librarian is appointed, therefore, it is essential that the works library should be put in charge of some particular person who has the part-time duty of organizing it. Accurate records must be kept, otherwise the stock lacks control and becomes troublesome to use. Good practice from the start in selection, ordering, indexing and arrangement, saves money all the time and creates a live and well-used library that can pay for itself in time and labour saved. Decisions must be made on what subjects to cover intensively and what to dabble in: obviously the policy on selecting material must be flexible to allow for changes in the firm's interests, the development of new lines, and so on. It is still by far the best course to set aside a separate room, though this creates some difficulty with a part-time librarian, because the library should not be left without supervision. One solution is to restrict the opening hours, though this cannot be recommended as it cannot always be foreseen when enquiries are likely to arise. If a typist supervises, she should be allowed to attend a course of training in special librarianship, and be encouraged to pay visits to other libraries, public and special, to study

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their methods. The publications of the Library Association and of Aslib frequently contain useful notes and articles for the beginner. The industrial library is a tool, and, like any other tool, should be operated by a trained person.

How far can a factory library be self-supporting ? The answer is that in these days no library, and least of all the small industrial unit, can afford to be completely so. But many of our problems can be solved by co-operation, and I suggest that factory libraries can greatly increase their value by organized co-operation in two ways : nationally, on a subject basis, and locally, on a general basis.

1. *Nationally*

There are two possible lines of communication that may be available to the individual factory. Firstly, it may be a part of a large concern having a central research or development department with a large library. The Metal Box Company factories, for example, have two systems based, one on technical and the other on commercial information services. These act independently and answer enquiries, circulate periodicals, prepare write-ups and reviews of the literature, and so on. In addition, most factories have a small library of some two dozen books and a dozen periodicals under the control of the personnel officer. The research division circulates an 'Information Letter' of short, informal abstracts from the technical press, and uses a request form that can be sent in to the research library for further information. In this way, the full resources of the company are made available to factory executives and technicians, the sales force, and administrative personnel.

But most small factories do not belong to such an organization. They can subscribe to national research organizations, nevertheless, in the Research Associations, whose work in this field has been described by L. G. Patrick (4). These associations are financed jointly by industrial subscriptions and Government grants from the Department of Scientific and Industrial Research, and their information services form a considerable part of their activities. Most industries are now covered by one of them.

2. *Locally*

The pioneer venture in this field of co-operation was the Sheffield scheme, begun in 1933 (5), and based on the Sheffield City Science and Technology Library. Thirty-nine libraries and firms are members, and agree to make their collections available to each other, while union catalogues are maintained at the City Library. Four other similar schemes are yet in their infancy, but it seems clear that this is a most fruitful form of organization, with great possibilities. That being developed for Hull has been described by Miss Binns. A scheme based on the area of the North London District of the S.E. Regional Board for Industry was initiated by A. W. McClellan in 1949, with the co-operation of the Regional Board (6), and has been imitated for the West London

District (7). Already the Acton Central Library, its headquarters, has a union catalogue of nearly 2,000 periodicals available for loan, and the scheme shows promise of being of very great value. An experimental form of co-operation along similar lines is being carried out in Hertfordshire (8).

Such a scheme has a natural basis in the public library, which can thereby increase its own value to the community. Though long out of touch with industry, public librarians now realize their responsibilities and are eager to assist with the provision of such services. They require guidance on what is wanted, however, and it is up to industrialists to make their needs known. The advantages are obvious: local union catalogues make it possible to obtain books and articles at very short notice, and the general basis and wide knowledge of sources in the public library can easily produce information in marginal fields not covered by the factory library. Local commercial information can be collected in the form of trade catalogues, directories, indexes of trade names. A measure of the status that can be achieved by such a scheme is the recent permission given to Sheffield City Library, by the Patent Office, to lend patents from its depository collection to members of the interchange scheme.

But however extensive the systems of co-operation may become, the factory library remains the most important element, because it is there that requests for information are actually received. Great and glorious schemes are of no value if they break down at the point of service: the reader, on whose behalf all these organizations exist, must be satisfied with what he gets. It is important, therefore, that those who man the service points should be aware of the growth of knowledge and the demands made by those who seek it. It is in the factory library that the real gains are made. Properly used, it is a valuable tool in production, and unlike all other tools, it does not depreciate; on the contrary, the more it is used, the greater becomes its value.

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INDUSTRY AND THE PUBLIC LIBRARY IN KINGSTON-UPON-HULL

By MISS J. BINNS, B.A., A.L.A.

Librarian, Commercial and Technical Library, Kingston-upon-Hull Public Libraries

Hull, 2nd October, 1952

THAT public libraries should be a source of commercial, technical and scientific information is not a new idea to librarians ; but it is an idea which has been slow to bear fruit, and is, in consequence, fairly novel to the majority of business men and technologists.

Public libraries in the largest industrial cities already enjoy well-deserved reputations for efficient service to industry, and have developed special departments for the purpose ; but, taking the country as a whole, the public libraries are not well-equipped to supply industrial information, and, as a result, local concerns make little use of them. Less than a dozen public libraries have special commercial and technical sections, and in the rest these subjects have to be included in the general reference departments, where frequently the emphasis is on the humanities. Such a bias is understandable where staffs lack experience in the documentation techniques required for publications of a commercial and technical nature. The high cost of technical books and the rapidity with which they become out of date is a further deterrent.

However, attention has recently been drawn towards the whole question of the public library and its relation to industry by the report of the Panel on Technical Information Services (1), which was published last year. The Panel recommended that public libraries should be encouraged to increase their own holdings of technical literature, and also to develop their potential value in the nation-wide system of industrial information services, as points of contact between the general public and the resources of the many special technical libraries attached to institutions, commercial concerns, research associations and Government departments.

It seems unlikely that the recommendation of the Panel will be followed by the setting up of commercial and technical departments in the small and medium-sized borough libraries ; but it may not be long before all large boroughs provide such a service. During the last twelve months there has already been some movement in that direction, as two further public libraries in large industrial cities have opened special departments. A separate commercial and technical department was started in Newcastle in October 1951, and a similar department opened at Hull in December last.

The commercial and technical department at Hull is, then, in its infancy. It does not yet bear comparison with its well-established counterparts at Leeds or Manchester, but it can already provide a reasonably good service for industrial enquiries. Each week we make further

contacts with local business men, engineers and chemists, who are satisfied with the information they obtain and return to use the department again. But, on the whole, it must be admitted that industrial Hull is not yet public library conscious. Many among the audience here to-day, no doubt, were unaware that a new section had been opened until the Aslib Conference brought it to their notice, and, if not actually sceptical, may have only a confused idea of the type of service we aim to give. I welcome, then, this opportunity to outline the aims and resources of the new library.

Scope

There has to be an elastic quality about our service due to diversity of subject and variety of reader. We have to consider needs varying from the elementary to the advanced, of the whole local community, whilst the range of subjects which should be represented on our shelves is disconcertingly wide: the technical section covers most of the pure as well as the applied sciences; and works on numerous subjects, including law, finance, trade, economics, transport and industrial management, make up the commercial section.

The department, obviously, cannot cover each subject in equal detail, but as there is no guarantee against any enquiry on any topic arising from the incalculable public, some literature must be provided in all classes. On the other hand, subjects are given priority according to demand and local need. Industries in Hull are represented in proportion to their importance in the city; we are, for instance, building up strong collections of literature on paints, oils and fats, timber, marine engineering, shipping, and so on.

It is, therefore, a mistake to think that only general or elementary works may be found in the department. On certain subjects of local interest there will soon be comprehensive collections available. And again, the service is not limited by the books actually in stock. Using abstracts, indexes, bibliographies and other aids the staff can determine the existence of further publications on any subject, which may either be borrowed for the reader from other libraries or institutions, obtained in photocopy form, or, more rarely, on microfilm. During the last few months the department has supplied over sixty photocopies of articles in periodicals which were not in the stock of the department.

I hope I have made it clear, then, that although the department's field is wide it does give a service which is far from superficial. Our own holdings of literature on many subjects are considerable, but where our stock is inadequate to meet an enquiry, we are not an isolated unit, but can draw upon the resources of highly specialized organizations in all parts of the country.

Stock

The stock of the department amounts to approximately 4,000 books on the open shelves and a further 15,000 in the stack, whilst new books are being added at the rate of 2,000 annually.

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Methods of selection

Public librarians are frequently asked how they make their selection of new books, especially from those in fields in which they cannot be expected to have expert knowledge. The answer, however, is fairly simple. Firstly, by scrutinizing the *British National Bibliography*, the H.M.S.O. *Daily list*, publishers' circulars and other lists of publications, the librarian is aware at once of the issue of most items of importance. Secondly, actual choice of books is influenced by book reviews, by the reputation of the publisher, or by the recommendation of a specialist on the subject.

In Hull we have been most fortunate in the assistance given by local business men and technologists in book selection problems. We have asked and received advice, not only on new books, but also on standard works of previous years. For example, we bought books by Markley and Bailey in the American 'Fats and Oils' series—an invaluable addition to our stock—on the recommendation of a local chemist; whilst last month, on the suggestion of a member of a local paint manufacturing concern, we ordered eight books on paint and varnish. Co-operating with local experts in this way, we hope to overhaul other sections of the department during the coming year.

It is surprising how many items are acquired as gifts. Research associations, institutions, societies and industrial concerns—the British Rubber Research Board, the Federation of British Industries and the I.C.I., to name a few—will supply their publications without charge on demand. In several cases the library is on the mailing list of a concern or institution, but our usual procedure is to send letters of request for individual items as announcements are noted in trade and technical periodicals. Booklets, pamphlets and periodicals received in this way frequently contain data not available elsewhere and are, therefore, valued acquisitions.

Special collections

Types of publications in stock range from standard works of reference, text-books, monographs and year-books to Government publications, statutes, statutory instruments and newspaper cuttings. There is not time to dwell on all these items, but I think I might mention in some detail the collections of special material which are kept apart from the main sequence of books.

Patents and standards

Hull is a depository library for British patents. Unfortunately, space does not allow for the storage of more than fifty years of the specifications themselves, although the abridgment collection dates from the seventeenth century. A set of British Standard specifications is also available, together with Ministry of Supply D.T.D. specifications; whilst we have recently placed an order for the standards of the American Society for Testing Materials.

Trade catalogues

The trade catalogues are kept in a separate sequence classified by

product and indexed under subject and name of manufacturer. The bulk of the material was supplied last year as a result of an appeal to twenty-six trade associations for the literature of members. Since then, we have continued to acquire catalogues, but in more manageable numbers, from concerns in all parts of the country, usually in response to direct requests for individual items as they are published.

Directories

Over 350 directories are now available and are shelved together near the door for the convenience of the quick reference enquirer. They include professional and trade directories, town and telephone directories of the United Kingdom, and overseas trade directories of nearly thirty foreign countries.

File of Current Information

As its name implies, this File contains only material of current interest, including pamphlets and leaflets of an ephemeral nature, but chiefly press and newspaper cuttings—approximately 100 journals are clipped regularly. Items are arranged in a classified sequence and indexed under subject only, which means a great saving of staff time in accessioning and detailed cataloguing. At regular intervals the File is combed for out-of-date material, whilst pamphlets proving to be of permanent interest may be taken out and fully processed and catalogued. As a source of up-to-date information on current economic topics, such as cost of living, wages, production and employment, the File is especially useful.

Periodicals

In view of its importance in the department the periodical collection merits more than a passing mention. At present we take regularly 370 journals—an increase of 250 titles since January this year. Of these approximately 100 are cut up for the File of Current Information, as I have just described, whilst the rest are either kept for a few years or bound and filed permanently. Our aim is to exploit our periodical holdings to the full. So far we have not had the time or the staff to index those journals not abstracted by published indexes, and which are not clipped for the File, but we plan to do so in the near future.

Selection of periodicals for the new department was not made without considerable thought. We aimed at supplying firstly, standard journals of general interest, for example, *Board of Trade Journal*, *Economist* and *Nature*; secondly, specialized trade and technical journals, with particular emphasis on those of interest to local industry, such as *Paint*, *Fishing world*, *Soap, perfumery and cosmetics*, *Shipbuilding and shipping record*, and many others; and lastly, published indexes and abstracts of periodical literature, *Chemical abstracts*, *Science abstracts*, *Engineering index*, *Food science abstracts*, for instance, and other such essential bibliographical tools.

Lack of back files of periodicals has been a considerable handicap, as enquiries, particularly of a highly technical nature, cannot be answered

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satisfactorily without reference to volumes of journals—certainly not without checking abstracts for previous years. However, for the first few months after opening the staff had to manage with sets of the few periodicals which had been previously taken in the Reference Library, and even these were mostly incomplete and unbound. We had nothing but the current year for periodicals newly added to our holdings. Naturally, the collection and binding of abstracts and periodicals has been a task of major importance. Considerable progress has, however, already been made—many of the missing parts in the existing sets have been replaced, and altogether 1,000 volumes have been bound. In addition, we are beginning to acquire files for the new periodicals, most notable being a set of ten years of *Chemical abstracts* and several years of *Industrial and engineering chemistry* and *Analytical chemistry*. Many of these periodicals were obtained as gifts from local firms, libraries and private individuals ; but we have also benefited considerably from the interchange scheme of duplicated periodicals operated by the British National Book Centre. I welcome an opportunity to express appreciation of this excellent organization, which does not seem to have received, as yet, the publicity it deserves. Indeed, so good is its service, that, as a subscriber to the British National Book Centre, it should be possible for the department to build up over the next few years sets of periodicals comparing not unfavourably with those gradually accumulated in well-established libraries of technology.

Enquiries

Perhaps I should supplement this catalogue of our stock with a few examples of specific enquiries ; otherwise, I may have created only a generalized impression of the practical information value of the department.

We meet with a great variety of enquiries, but, for convenience sake, they may be divided into three broad classes. Firstly, there are those which can be answered in a few minutes. For example, the request for the address of a silk merchant in Milan ; food standards for jam making ; port dues charged at Oslo ; or the purchase tax on umbrellas. Other enquiries of a similar quick reference nature might be for a formula for hand-cream ; the current market price of pineapples ; or the iodine value of palm kernel oil.

Secondly, there are those enquiries which involve a rather longer search, but which may eventually be answered satisfactorily from publications actually in stock. A request for statistics of pre-war and post-war standards of living, early British patents on fountain pens, or the law relating to canteens in factories, for instance.

Finally, to mention those enquiries which involve lengthy searches of, perhaps, several days' duration. A reader might require an exhaustive survey of literature on German underwater paints, on the manufacture of synthetic gas in the United States, or on the use of radiant heat in the glass industry. In such cases it might be necessary to draw upon outside sources of more specialized information, in the way I have already

described earlier in this paper, to supplement the answer obtainable from publications in the department.

I hope this brief survey has given a fairly clear picture of the scope of the new department. I have not tried to ignore the weaknesses, the blind spots inevitable in such a young library, but I hope I have given some indication of the goal towards which we are working. Obviously libraries do not grow like mushrooms overnight, but with the help of a keenly interested staff, measurable improvements are being made each month. Our service is, in fact, developing rapidly, and, therefore, I do not think it would be premature to consider now one particular line that this expansion might take.

Proposal for a scheme of library co-operation in Hull

A survey undertaken by the department last February on behalf of the Reference and Special Libraries Section of the Library Association showed quite clearly that there is a movement among local concerns towards the establishment of works libraries. At that time we listed approximately twenty of them having small libraries or collections of technical books, and several others have since indicated that schemes for a library are under serious consideration. It does seem that the Commercial and Technical Department and these works libraries are developing at the same time. Would it not be possible, then, to launch a scheme of co-operation between them for their mutual advantage? Co-operation might take the form of interloan of publications and joint discussion of problems of special librarianship. An organization similar to this, which has been in operation in Sheffield for twenty years, might serve as a model for Hull, to be followed in detail or adapted according to local needs. For those who are not familiar with the Organization for the Interchange of Technical Publications in Sheffield, I will outline its functions briefly. A more detailed description, by the originator of the scheme, Mr. J. P. Lamb, Chief Librarian, Sheffield City Libraries, will be found in *Aslib Proceedings*, 1950 (2).

The Sheffield organization has a membership now of thirty-nine libraries. These include the University Library, the Science and Technology Department, Sheffield City Libraries and libraries attached to the research associations, Government departments and industrial concerns in the area. Membership is limited to libraries having a minimum of fifty books and ten periodicals, with the intention that those participating should give as well as take. Members agree to make all their resources, with the exception of current numbers of periodicals, confidential reports and the like, available for loan. A union catalogue of books and periodicals is held in the Science and Technology Department, Sheffield City Libraries, and all requests for the location of publications within the organization are made through the department, which is the administrative centre of the scheme. The staff keep this catalogue up to date and compile statistics of loans. The constitution provides for a policy-making body, the Annual General Meeting, and there is also an Executive Committee which deals with urgent business as it arises during the year.

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Finally, there are detailed rules governing conditions of loan. For example, members undertake to return publications immediately on demand, and to loan books only on the receipt of the official requisition form.

What advantages would works librarians in Hull draw from such a scheme if operated here ? The following points come to mind at once :

- (1) Saving of time. Books and periodicals if known to be available locally could be borrowed at once.
- (2) Access to literature on subjects outside the limits of a concern's own field.
- (3) Economy. By avoiding unnecessary duplication of costly books and sets of periodicals within the organization.
- (4) The privilege of borrowing from the Commercial and Technical Department, which might be reserved exclusively for members of the organization as is done at Sheffield.
- (5) Enjoyment of special concessions which might be granted to an organization of this kind. For instance, the Patent Office has waived its non-loan rule in the case of British patents deposited at the Sheffield City libraries, which now may be borrowed by members of the Interchange Organization.
- (6) Opportunity for those interested in acquiring and handling technical publications to meet at regular intervals and discuss common problems.

The staff of the Commercial and Technical Library could compile the union catalogues and administer the scheme. Indeed, a start has been made in this direction, and we already know the extent of the files of periodicals of certain works libraries in Hull. On several occasions we have borrowed items locally, and in return over 100 books and periodicals have been lent by the department. Furthermore, many of the articles we have supplied in photocopy form might have been obtained locally without cost, had we had a complete list of periodicals available.

There are some grounds, therefore, for believing that there is an interchange organization in embryo in the city already. I hope it may eventually be fully developed. After all, Hull is rather isolated as an industrial community, and it is to our advantage to make the most of the resources of technical publications immediately available locally.

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- (1) *Journal of Documentation*, vol. 7, no. 2, 1951, pp. 92-112.
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IF I HAD MY WAY—WITH PUBLISHERS

BY B. AGARD EVANS, M.Sc.

Chief Librarian, Ministry of Works

London, 19th November, 1952

I LOVE publishers. Let me make that point crystal-clear before I embark on the main theme. I love publishers. Apart from the fact that their activities provide me with my job, I think that they are one of the most important, if not the greatest, factors in the growth of civilization—from the ancient Greeks to the atom bomb. Scientific research on its present scale is impossible without the publishers. Technological advance and the application of research to industry would be atrophied without them. We should, therefore, acknowledge our great debt and be grateful for the very high standard of achievement of publishers. We should recognize also the high ethical standards of the majority of them.

Another preamble point I want to make is that publishers are dependent upon their customers. For the scientific and technical press the special librarians are the most important customers. The private library of the professional man is becoming rarer. The growth of libraries in industry, the increasing output of scientific publications, the increasing cost of publications, and the decreased purchasing power of the professional man's pay : all make it more difficult for the individual to cover the field from his own pocket.

The special library is also frequently the publishers' unpaid advertiser. Abstracts, bibliographies and accessions lists are potent means for introducing new publications to potential subscribers. To say nothing of the special librarian's part in recommending items for the *Aslib Book List* or *British Book News*. His advice is also frequently sought by individuals. It is, therefore, worth while for publishers to consider the librarians' needs and wishes. Being among the most intelligent of business men they will be anxious to do so. So I hope that the librarians in the audience will not hesitate to put their grievances and requirements candidly to the publishers, in the knowledge that what they say will be received with the consideration it deserves. I am not unmindful of the dangers besetting the path of 'candid friend'. A friend who becomes a candid friend is apt to find himself not a friend any more.

(1) Now, if I had my way with publishers of books, I should punish severely all who put out books with ring binders or frightfully shiny spines, which you cannot stick a label on or mark with a stylus.

(2) Nearly as bad are those who cover the spine with printing. Why cannot publishers of all books recognize the librarian's need to put a shelf mark on a book and leave him a space of an inch or so at a distance of one inch from the bottom ? It seems so elementary.

(3) Then there are those fiends who run the title *down* the spine so

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that the unfortunate reader has to reverse the inclination of his head and probably shift his feet to read it.

(4) There are those who trespass on the holiest of the librarian's ground, the inside front cover, where the book-plate is placed. They stick on 'useful' tables or town plans or other material. Keep off this ground, I say.

(5) We can now give nearly full marks to publishers for their title pages and for recording the dates of publication. But indexes leave a lot to be desired. The index is vital in a scientific book and yet so many of them give the appearance of having been prepared by the office boy or Aunt Fanny or, worst of all, by the author. The preparation of an index is a highly skilled job and well worth doing well. It is essential that the indexer shall not merely be a skilled indexer, but also that he should be familiar with the subject. Such men are rare. But they do exist, and, if it is not unethical, I suggest they are usually to be found in special libraries. If I had my way I would make publishers have their indexes prepared by special librarians as a spare-time job. Aslib could register a panel and charge 5 per cent., as they do with technical translators.

(6) I am not going into questions of format, though I cannot for the life of me see why such a multiplicity of sizes is tolerated in a progressive industry. And the low fellow who produces books longer than they are deep : has he ever seen a library shelf ?

(7) One exasperating thing happens when an agreement is reached for a U.S.A. book to be separately published in Britain. The U.S.A. book comes out months in advance of the British ; one orders a copy for research men or managers panting to see it. It cannot be supplied from U.S.A. because of the agreement not to enter our market, and it cannot be supplied in Britain because it is not yet published.

(8) I shall only mention, briefly but bitterly, and more in shame and sorrow than anger, those publishers who produce semi-popular books by pseudo-professional authors. It does not happen much in scientific work, but in the borderline technological spheres such as architecture, furniture, plastics, design, as well as in certain trades. This catch-penny stuff clutters the field. The trouble is that there is a large and ready market for the trash and the barrow-boy publishers cash in on it.

(9) Now, my last word to the book publishers. It should be compulsory for them to print a short, but adequate bibliographic reference on the verso of the title page, together with classification by U.D.C., Library of Congress and Dewey. Look at the economics of it. Cataloguing costs in special libraries are between 5s. and 8s. per item. Of this at least 3s. is for the description and classification. On a thousand copies of a book sold to libraries the cost is no less than £150. The cost to the publisher for having the reference and classification done and printed would be perhaps £1. Net saving is £149 on every 1,000 copies. If the 1,300 members of Aslib have an average accession rate of 1,000 books per annum, the overall saving of skilled labour would be £193,700, a figure large enough to interest the Chancellor of the Exchequer or the

Scientific Man-power Committee. The saving applied to general libraries would be many times greater. Similar considerations apply to periodicals.

Now for the periodicals, which are peculiarly important to special librarians.

(10) There is a special hell reserved for those who change format during a volume ; who include advertisements in the regular pagination ; or who have loose plates in the issues.

(11) Periodicals in special libraries have to be read by the library staff ; articles indexed and abstracted ; books marked for purchase ; important articles indicated to officers for special attention ; the whole circulated to several people ; and eventually bound for future reference. These operations are carried out by different members of the staff. It is usually necessary to indicate the various actions on the front cover.

To help in this process four things are desirable :

- (a) The year, volume number, part number and date clearly indicated on the front cover.
- (b) A surface to which a circulation slip can be stuck. Dark, shiny surfaces are tiresome.
- (c) A contents list readily accessible on the front or back covers or at the front of the text.
- (d) A light coloured space near the top of the front cover for indicating action within the library. This need not be more than an inch or so in each direction—and it need not be regular. If in box form it could carry the bibliographic reference of the issue at the head of it.

(12) The variety of format in periodicals is even more troublesome than with books. Boxes or spring-back folders are normally used for shelving them. An agreement by publishers to adopt three or four standard formats would make life a lot easier for the librarian and would also reduce the final binding costs. Great advance has been made recently in this direction on the Continent, following the adoption of standard paper sizes.

(13) On indexes, I cannot understand why an editor who is presumably proud of his publication should be satisfied with a cheese-paring index which frequently conceals more than it reveals. Such men are irresponsible of the important part they play in the documentation of their subject.

(14) Since I have mentioned this word 'documentation' let me introduce a crucial point. Periodical articles of value are the life blood of research and of technological advance. Quoting from a recent inquiry carried out for the Department of Scientific and Industrial Research among industrialists in north-west England : 'The commonest way in keeping touch with the latest technical advances was the use of trade journals (64 per cent. directors, 82 per cent. technicians and 52 per cent. of foremen used this method)'.

The volume of publication is prodigious (I shall have more to say on this later) and the usual way for keeping those concerned really abreast of current matters is for the articles to be abstracted or summarized. Like cataloguing, this business of abstracting selected articles goes on in practically every special library. One article may well be abstracted

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twenty, fifty, a hundred or more times in different libraries. Here is a colossal waste of effort which publishers could so easily save.

Every important article should be accompanied by a summary. Even an author's summary. While this summary would not always serve the purpose of all abstractors with special bias, it would serve most. I would go further and have the Universal Decimal Classification number added to it. This is being increasingly done by Continental publishers and serves as a useful indication of the subject matter when the article is in a foreign language. This is a field in which the International Council for Building Documentation is having considerable effect in connexion with their scheme for the international exchange of information by means of abstracts. Many Scandinavian journals are including summaries in English and adding English captions to their figures and photographs.

(15) A particular bugbear of mine is an American publishing house which sends me tempting offers to supply a perfectly marvellous textbook or compendium on a certain subject, free of charge, if I will place a subscription for one of their periodicals. The fact that I already subscribe to four copies of the periodical does not entitle me to the *magnum opus* ; nor can I buy a copy, which is reserved exclusively for new subscribers. I denounce this practice as unethical ; it is uncivilized to deny to engineers information of value. It should be freely published. When I wrote in these terms to the publishers, they replied that really the relevant works only collected together data already published. Now either that collection of data is useful, in which case it should not be withheld ; or it is not useful, in which case they are dishonest in using it as bait for new subscribers.

(16) A minor but valuable point is that editors should indicate clearly when a serial is a serial, how many parts it will have and which is the last one. It is maddening when you think you have got the lot together to be faced with a further instalment or, on the other hand, to wait for another instalment, eventually realizing that you have had the last one.

(17) Then there are the bright, modern publishers who are issuing their periodicals as magazines of separates. These are maddening things to handle from the librarian's point of view. Either he must bind them firmly together for circulation and retention or he must register each item separately.

(18) Finally, I come to the question : Is your periodical really necessary ? I have made an analysis over six years of 340 British periodicals on building subjects. Every article of technical importance (in our opinion) to building is listed in the *Library Bulletin*. 170 (50 per cent.) have yielded no references at all. 95 per cent. of all references have come from fifty-five of the periodicals. At first sight, a dictator would say, let the other 285 of them cease publication ; the 5 per cent. of useful matter which they carry could be absorbed in the fifty-five good ones.

For various reasons, the solution is not so easy. Some which yield few references, or none, are, in effect, newspapers and valuable as such.

I cannot go into detail here, but my results conform in pattern with Dr. Bradford's extensive survey of 1936-37. There is undoubtedly a

very wide subject scatter of papers and considerable area of overlap. Each of these redundant papers is using up skilled staff, printing and paper. But my concern here is with the libraries and the readers. The library is compelled to subscribe to and process four periodicals where one would suffice. The professional man is usually forced to choose one or other paper because he cannot afford to subscribe to several. He, therefore, gets only a fraction of the whole picture of his subject. The periodicals themselves suffer because of the limitation of subscribers and because of competition for the few eminent writers in the field.

In the result nobody gets a good service.

The advertising revenue is usually the nigger in the woodpile. The subject is vitally important, but the solution is difficult. Can one hope that the publishers themselves will attempt to rationalize their output for the benefit of all ?

(19) In conclusion, let me remind you that publishers, special librarians and information officers are inseparably involved in one of the most baffling and urgent of to-day's problems—name'y documentation. Documentation is the recording, organization and dissemination of knowledge. If the publishers, by their manner of recording information, can assist in its organization, then the whole process is carried forward to the benefit of all. I should like to think of the publishers turning to Aslib as a Consumers' Council ; Aslib on the one hand advising them on what the special librarians want, and on the other, explaining to their members why the publishers cannot achieve the impossible.

Discussion

MR. A. J. WELLS (British National Bibliography) said he had not intended to be the first to open the discussion, but he felt called upon to deal with the matter of cataloguing and classification raised by Mr. Evans in a paper which he had enjoyed very much. Before going on to this, however, he wanted to touch on the question of putting titles up or down the spine of books. There had been some recent correspondence on this matter in the *Bookseller*. In his opinion, the reason why the titles went down the spine was because in this position the warehouseman was better able to read the titles of books stacked flat. The reader, on the other hand, with his books standing upright, required the title to go up the spine for easy reading. Some publishers gave way to readers, some to warehousemen. The problem could be simply solved by publishers themselves all putting the titles to read from bottom to top and training warehousemen to stack books *face downwards*.

On the question of publishers placing catalogue entries on the verso of the title page, Aslib had already asked the British National Bibliography for their comments and they had supplied to Aslib a list of the bibliographical details which they felt it desirable a publisher should supply on the title page or the verso of a title page. He did not think that the publisher should be asked to frame the actual entry. The onus of constructing an entry should rest with the cataloguer, but the onus of supplying the information could legitimately be placed with the publisher. Mr. Wells did not think that it was possible or desirable to ask publishers to put a selection of class numbers on the back of their title pages, it was a little unfair and unrealistic to expect them to do so. Librarians themselves found the job of classifying hard enough without expecting publishers to cope with the intricacies of a variety of systems of classification. He pointed out that the Library of Congress had been encouraging publishers in America to send books to them in sheet form so that the books could be classified at the Library in advance of publication. If British publishers were prepared to do this

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for the *British National Bibliography*, similar information might be included in their books, but he did not think this a very likely event. He felt bound to remind members of Aslib that in the *British National Bibliography* there now existed a publication which gave cataloguing material for all new British books. This material was available currently with the publication of the books themselves, except in a few cases where a lapse of a week or so might occur. This lapse was the fault of publishers who failed to deliver their books to the Copyright Receipt Office of the British Museum before publication and he would like to say to any publishers present that they should arrange to send copies of all their books as early as possible, and in any case well before publication, to the British Museum in order to minimize this delay.

Mr Wells thought that much of the sting had been taken out of cataloguing and classification by the *British National Bibliography*, and though they had limited themselves to providing only a Dewey classification number, he was confident that the subject analysis given for each book was of great assistance to all classifiers. He was pleased to have had this corroborated recently by one or two special librarians, who expressed the view most strongly that the *British National Bibliography* was indeed a great help in this way. It was not only unreasonable, he felt, to ask publishers to classify their publications, but special librarians would not be satisfied with the result. Cataloguing and classification were techniques which could not be so lightly dismissed. An organization of trained librarians was essential for the task. This we had already in the organization which produced the *British National Bibliography*; it was up to librarians to make use of it.

MR K. B. SHAW (British Scientific Instrument Research Association) said he did not know how far either Mr. Evans or Mr. Wells had studied oriental languages, but personally he was accustomed to reading from the top downwards. It seemed to him that the correct place to put the name of the author on the spine of a book was at the top, with the title following on; though this might seem odd to other people. Also, referring to Mr Evans' remarks, warehousemen were not the only people who put books down on tables. In his own library he found it very difficult to keep books on the shelves—people would leave them lying on tables. If the lettering runs down the spine, it is then upright, although this was a minor point.

There were, however, a couple of small points he would like to make in support of what Mr. Evans had said about book-publishers. The worst he had ever come across was one who issued a so-called different book under a different title when, in fact, it was only a reprint or second edition. For example, a publisher might have issued a work entitled *Workshop practice*, and a few years later reprinted it and issued it as *Machine tool practice*, or some other such title, presumably with the direct intention of fooling people who had already bought a copy into buying another. When this second book had been bought, classified, catalogued, and put on the shelf, it was discovered that there were two copies of the same book under different titles. It was sometimes necessary to issue an American edition under a different title, in order to avoid confusion with a previous publication, but, in this case, a note to the effect that this was an American edition of an English work, or vice versa, should be printed in the book. In a public library, he had seen the catalogue entry for a particular author, listing perhaps six novels, which turned out to be only four novels in fact, two duplicates being listed under their American titles.

Finally, with regard to periodicals, he felt that in almost every field there was room for two having similar, if not identical, coverage. There was always the risk that the editorial staff of a journal with a monopoly of one subject might adversely influence research in that subject by emphasizing some aspects at the expense of others. Cases were known where daily newspapers—including one national daily of enormous circulation—deliberately suppressed news by never allowing certain persons to be mentioned in their columns. Competition did sometimes keep people on their toes. In addition, it sometimes happened that if a particular item of information could not be found in one journal, it was unlikely that it be mentioned in any other—which was disheartening for the person searching for that item. If there were two periodicals, there was a reasonable chance of one noting what the other had missed.

MR. R. W. PRIOR (R. H. Harry Stanger Laboratories) thought that Mr. Evans had let off rather lightly those publishers who produced expensive books in cheap bindings. He had a case where a particular book, purchased at three guineas, had been in use for six or seven weeks when the cover had come away from the spine. In his own public library he had seen the same book a few weeks later and a similar thing had happened to that copy, proving that this was not an isolated case. He thought that more attention could be paid to this point so as to avoid the expense and inconvenience of rebinding.

DR. D. J. CAMPBELL (Royal Cancer Hospital) said that supplements to periodicals were his own particular bugbear. The basic objection to supplements from the librarian's point of view was that they were asked for both as parts of periodicals, and as independent works: they, therefore, had to be catalogued, in effect, twice. Where supplements were not included in the subscription price to the periodical, details of them should be sent on separate cards or sheets (*not* buried in the advertisement pages of the periodical).

With a great many supplements which were not included in the subscription price, there was no obvious reason why they should have been published as supplements at all. The absurdity had recently been achieved of a periodical (*Advances in Physics*) which was itself a supplement to another periodical. Supplements should be numbered consecutively throughout; the practice of numbering as, e.g., volume 38, supplement 1, gave no idea how many supplements had previously been published.

MR. J. E. WRIGHT (Institution of Electrical Engineers) said that he would like to congratulate Mr. Evans on a paper which was both useful and funny. He hoped that the points Mr. Evans had raised would not be lost sight of and would receive further consideration, and for this reason he would like to add to them. First, he would like to emphasize the desirability of more uniformity in the sizes of books. In a library which had been long established space could be a very serious problem. If books could be limited to two or three sizes, including folio, it would be possible to arrange the shelves much more closely and so save as much as a shelf per bay.

Mr. Wright said that he would also like to complain about so-called 'new editions', which were, in fact, only reprints. On one occasion he had actually compared two editions page by page, and found no difference in them whatsoever.

On the question of periodicals, it would be helpful to know when those which had not an advertised specific day of the week or month for their appearance were overdue, so that appropriate steps could be taken to deal with non-arrivals. He supported the idea that full bibliographical information, volume, number, year and part, should appear on the cover, and suggested the right-hand top corner or at least some uniform position. Mr. Wright also remarked that it is helpful when this information appears also on the spine.

The remarks on serials were very true, he said, and it could happen that what was thought to be a book transpired later to be part of a serial.

As regards independent journals, their continued existence obviously depended upon whether the publishers could sell enough of them or not; he thought Mr. Evans was incorrect in his remarks about the advertisements, the income from advertisements was dependent upon the circulation of a periodical.

Referring again to books, he said he wished people would always give a book a title with a clear meaning.

MR. E. G. BRISCH (E. G. Brisch & Partners) said he had found Mr. Evans' paper most interesting, especially the question of unnecessary varieties, such as those of paper sizes or presentation, or, for instance, writing the title up or down the spine. Surely this was a matter for the British Standards Institution and he thought that publishers were the right people to submit these problems to the B.S.I.

MRS. A. M. WHITROW (Incorporated Society of Auctioneers and Landed Property Agents) said that her experience was in the legal field where books went into many editions because they became out of date very quickly. Often new editions were

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undertaken by persons other than the author and standard legal text-books came to be called 'so-and-so on such-and-such', edited by someone else. After a while the work of the original author practically disappeared and the editor, in fact, became the new author. Most reputable legal publishers, however, retained the first author's name, although unfortunately in many cases they dropped his initials and it became necessary to make enquiries of the publishers when cataloguing, but she had come across cases where publishing firms had not only issued a new edition under the last editor's name—this, of course, they were entitled to do when the book had actually become a new work—but where the title page bore the name of the new author only and stated, for example, 4th edition. Puzzled, because you had not heard of a previous edition, you might with luck find in the preface that this was, in fact, the fourth edition of a book, of which the new author was the editor.

Mrs. Whitrow said that, strange as it might seem in a field where the date was so important, she had come across many publications which bore no date and also many indexes which were quite inadequate. She felt, however, that the author, rather than the publisher, was to blame for the inadequacy of the index. Most people thought indexing was just a matter of common sense alone. Recently, when she advised someone who was going to make an index to read up something on indexing beforehand she received the reply : 'I prefer to keep an open mind.'

MR. J. E. L. FARRADANE (Tate & Lyle Research Laboratories), referring to the question of journals with shiny covers which could not be written on, said that for circulation purposes a label could easily be stuck on with adhesive tape or plastic adhesive. With regard to publishers offering special books to new subscribers only, the obvious solution was to take out a new subscription, as suggested, and then cancel one's old one !

With regard to the problem of abstracts at the beginning of an article, he pointed out that the Royal Society Conference had recommended the printing of authors' abstracts with all papers. Abstractors were often the same people as those who wrote papers and, in any case, if the abstracts were edited by the journal editor, with assistance if necessary, there was no reason why they should not be adequate ; the publishers could then send the abstracts to abstracting centres in advance of publication in order to ensure their early appearance in abstracts journals.

Mr. Farradane had two complaints of his own to make. The first was the regrettable practice of starting an article on page 1, only to say after a few paragraphs 'see page 23', and later 'turn to page 46', and so on—this was all right in *Chat Chat*, but not good enough in a scientific periodical ! Secondly, he deprecated the habit in some journals of inserting errata in any convenient space in the journal. Errata should at least be collected together at the end and preferably given each with the original heading of the article to which it referred.

On the problem of multiplicity of periodicals, he suggested that the remedy might be in the hands of scientific authors and societies. If a recognized list of reputable periodicals could be agreed, and if authors of worth-while articles, who wished their articles to be abstracted, agreed to write only for those journals, then the more ephemeral journals could be disregarded and allowed to lapse into obscurity.

MR. G. PARR (Technical Director, Chapman & Hall, Ltd.) said that, so far, the greater part of the discussion had been based on the assumption that the special library was the publisher's best customer. Much as he would like to think so—because that would mean that every technical publisher would have a basic sale of 1,000–2,000 copies of every book produced—this was unfortunately not the case. The individual reader was still the mainstay of the publishing world.

Some of the things that Mr. Evans would like publishers to do were not highly important for the individual reader—special markings for instance. On the other hand, he agreed with putting the classification number in the book, and that maps, charts and tables should be kept off the inside of the covers.

The index of a book was not the publisher's responsibility in general practice. In the standard agreement with authors they were expected to provide copy for the

index : not that they were necessarily expected to compile it personally, but the responsibility was the author's and not the publisher's. Aslib would be doing a service if they would undertake the compilation of a list of official qualified indexers.

Referring to the delay between the publication of American books and their corresponding English editions, Mr. Parr said that he quite appreciated that this was a sore point. The American publishers usually quoted as their publishing date the day the cover was put on the book, but the British publishers usually worked to a scheduled date to enable simultaneous publication to be made overseas if necessary. Most British publishers with permanent American connexions worked in harmony, but there was always the risk of delay at customs and the time spent in negotiations.

Finally, on the question of advertisements in periodicals, Mr. Parr stated that without advertising support a technical periodical would cost an exorbitant amount. As an example he quoted a 56-page technical quarterly which would cost the subscriber about 10s. without advertisements, but with the printing cost partly met from the advertising revenue the subscriber would only have to pay 2s. 9d.

Advertisements in technical periodicals should not be looked on as a necessary evil, but should be as informative to the reader as the text matter.

Dr. H. R. LANG (The Institute of Physics) said he was glad that Mr. Parr had defended the publisher. He himself was not a special librarian, but he thought Mr. Evans' delightful lecture was wholly irrelevant as far as publishers were concerned, and it was not true that the librarian was the publisher's best customer ; he was, in fact, an agent. In his view, the most important people were, first, the authors and, second, the scientists who want to read the stuff. It should never be forgotten that books and periodicals were not produced to keep on shelves, but to convey information. The size and method of storage was a secondary consideration as far as the author and publisher were concerned. Some people complained about the changes in size or format ; these changes were not made for fun, but were intended to give better service to author and reader, and it was the librarian's business to find a satisfactory way of storage.

The best form of abstracts had been discussed many times at many levels. As far as he could see there should be more than one abstract of the same paper, e.g. some were concerned only with the result, others with the method, and others with a particular application. In his organization's periodicals they published the author's abstract after editing it.

Bernal's scheme for the distribution of papers as offprints* was extremely interesting, and he understood that one Society was experimenting along these lines. As for the lecturer's rhetorical question, 'Is your periodical really necessary?', Dr. Lang thought the idea that periodicals were the life-blood of scientists was not wholly accurate. In his opinion the best way to obtain scientific information was personal contact and discussion. Most people knew what was going on in their fields through their formal and informal contacts. The mere reading of scientific abstracts was not enough, the full papers should always be consulted in one's own specialist field. In each branch of science, three or four periodicals will contain the principal advances, and it is probably not necessary to read many more to keep up to date, for there is a great deal of repetition in the literature as there is in newspapers. One doesn't read all the newspapers, but is content with the *Daily Mirror* or *The Times*, or something in between, to keep one informed of what is happening in the world.

With regard to the titles of books, he would like to know if it was considered useful to have the title of a book on the cover when there was also a dust cover ? No mention of book reviews had been made and in his opinion they should be more critical ; in fact, he wished the Law of Libel did not exist.

The indexing of periodicals was another sore point and he would like to hear views on what proportion of the cost of the periodical should be devoted to the index.

* *The Royal Society Scientific Information Conference*, 1948, p. 253. (London : The Royal Society.)

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DR. D. J. CAMPBELL said that Dr. Lang seemed not to realize that librarians had been building up a tradition of service to the reader for fifty years, and were no longer merely store-keepers. If editors and publishers wasted librarians' time with futile practices, the librarians had less time to help library-users. Dr. Campbell further observed that if libraries were (as had been said) a small minority of book-buyers, letting them buy American editions of books while British editions were in preparation could not greatly damage the interests of British publishers.

DR. R. M. KLAAR (Petrocarbon, Ltd.) wished to stress that there should be as few changes in titles of publications as possible, although she realized, of course, that these were sometimes necessary. She had noticed two recent cases where the titles of American periodicals had been changed twice at quite short intervals. This naturally resulted in confusion in libraries, and she thought that if publishers found it necessary to alter the original title, they should decide on the final version immediately and avoid a sequence of changes.

MR. J. G. HALL (Esso European Laboratories) said he wanted to underline the point made by the last speaker. There was in this country a startling case—which, it will be appreciated, must be nameless—where in the last six years one title had been changed about five times, and he, for one, was patiently waiting for the next change. It was practically impossible to find any relationship between the different titles, or between titles and contents. How many publishers, particularly of periodicals, appear to have any real sense of continuity? He thought an explanation of the question was that few publishers ever considered that their journals would eventually be bound. The variation in sizes also bore out this explanation. There was also the case of one journal which ran to about fourteen volumes and suddenly in the fifteenth decided to drop the title page, for reasons of economy.

Mr. Hall said he did not know whether he dare mention the difficulties experienced with those arch-criminals of all publishers—H.M.S.O. For one thing, they seemed to have no idea as to the quantity of printing that was necessary. While it was to be understood that the publicity accorded to the recent D.S.I.R. investigation on the ablatory habits of the British people might well result in a demand which could not be immediately satisfied, there were too many cases in which statutory instruments and similar items were not available by the time they came into force. There was also the case of Unesco publications for which H.M.S.O. functioned as an agent; on one occasion, five months after publication, one such report was not yet available. Then there was the sorry story of B.I.O.S. and C.I.O.S. reports; their importance had been emphasized at ministerial level and when, as a result of this emphasis, they were beginning to be quoted in the literature as references, then H.M.S.O. let some of the most important ones go out of print. A further source of annoyance was the issue of the Ministry of Supply's series of volumes, *Selected Government Research Reports*, containing a mass of technical information with no indexes.

Another grouse he had was that H.M.S.O. did not know their stock. On one occasion he had had to contact the organization who were the subject of the required H.M.S.O. paper and ask them for the command number, and only then were H.M.S.O. able to produce the required item. He asked if there was any possibility at all of persuading publishers as a general body to issue at reasonable intervals complete catalogues of publications with dates of publication of each item clearly indicated.

THE CHAIRMAN (Mr. H. S. Pocock, Iliffe & Sons, Ltd.) said that Mr. Agard Evans had now received copious comments on his paper and would probably want to answer one or two of the points. In the meantime, he would like to know what Mr. Wilson thought about two of the matters raised in the discussion. The first was a suggestion that Aslib should form a Panel of Indexers—he, himself, felt that this could be extremely useful and an experiment that publishers would be glad to try out. The second was whether Aslib would be prepared to act, as it were, as a clearing house for complaints from special librarians, and circulate these complaints to the technical publishers. He thought that if Aslib were able to keep publishers informed on such matters, it would be performing a very useful service, and he would be glad to hear what Mr. Wilson had to say.

Mr. L. WILSON (Director of Aslib), in reply to the Chairman's remarks, agreed that a Panel of Indexers would be useful. This suggestion would be reported back to the appropriate committee, and before too long he hoped they would see some such scheme in operation.

Regarding the Chairman's second point, Mr. Wilson said that Aslib did, in fact, already act to a limited extent as a clearing house for complaints between special librarians and publishers. For example, he was at the present time in contact with the Publishers' Association on the question of the import of American books. He would even go so far as to say that he would like to see a joint standing committee, representing Aslib and the publishers, to which questions of this sort could be referred.

Reply by Dr. D. J. Urquhart (D.S.I.R.) to Mr. J. G. Hall (Esso European Laboratories) communicated later :

I am sorry time did not permit me to comment on your observations at the last Aslib meeting. The policy which is pursued regarding official publications is, in fact, determined jointly by H.M. Stationery Office and the issuing department. The question of whether a report should be allowed to go "out of print" or not, for instance, is referred by H.M. Stationery Office to the issuing department. In consequence, if you are dissatisfied with the policy that is pursued in any particular instance, I would suggest that you write to the issuing department about it.

'Regarding B.I.O.S. and C.I.O.S. reports, the majority are still in print, and even where they are "out of print", surplus copies may exist. If you think that any of the B.I.O.S. reports that are "out of print" are still of importance, will you please give me specific details and I will see what can be done.'

MEMBERS' FORUM

SIGNPOSTS : SOME SELECTIONS FROM THE 1952 SPECIAL LIBRARY LITERATURE

BY J. BIRD, M.A., A.L.A., and E. M. R. DITMAS, M.A.

Aslib Librarian and Aslib Editor

THIS paper is the first of what is intended to be an annual survey of the literature of documentation, covering both special librarianship and information work. Its aim is to select from the year's publications, whether books, pamphlets, periodical articles or any of the other miscellaneous items which form an important part of the stock of special libraries, those which are most likely to be of practical value in day-to-day work. It is designed specifically to help personnel in small libraries, and is directed particularly towards those who have not yet completed their library training or, in the case of information officers, those who have not yet had much experience.

The fully trained librarian and the experienced information officer will both be familiar with guides to professional reading such *Library Science Abstracts* (Library Association), *Library Literature* (H. W. Wilson Co.), and the *Survey of Documentation* (in Aslib's *Journal of Documentation*), not to mention the *Review of Documentation*, *Unesco's Bulletin for Libraries*, and a host of other library periodicals. Unfortunately, for the less experienced worker this wealth of references is apt to be intimidating and confusing. When there is so much that could be read (and so little time in which to do it), and when the documents themselves are not always at hand for easy consultation, the beginner is afraid of embarking on theoretical essays which are too advanced for him, and so leaves unread much that could be of direct assistance.

So much is now being published in the field of documentation that any selection of under a hundred items is bound to leave out much that is useful. Moreover, no two people will wholly agree on any such selection. Nevertheless, it is hoped that an annual survey of this nature will serve a useful purpose by signposting a limited number of important publications. Theoretical and historical discussions have in the main been omitted, as have also descriptions of the practice in large general libraries, except where it has been felt that the methods described would be capable of application in a small library. The list is not confined to work published during 1952, but it attempts to cover those publications generally received in British libraries during the year ; thus many items bearing earlier dates are included owing to delays caused by difficulties in publication (this applies specially to certain periodicals), or in transport in the case of overseas publications.

Book selection

The librarian's first concern should be the acquisition of a good stock, and for this he needs bibliographies. The first to be mentioned, because it is the most general in its coverage, is the fourth edition of the Aslib *Select list of scientific and technical books* (1). This list is arranged under broad subject headings and will be of great assistance to the special librarian in the selection of essential books outside his own field.

Three important works on reference books appeared during the year : Winchell's *Guide to reference books* (2), a revised and much enlarged version of the old familiar work by Mudge ; *Reference library stock* (3), a revised edition by L. R. McColvin, with the assistance of R. L. Collison, of his earlier book, *Library stock and assistance to readers* ; and a new edition of A. D. Roberts' *Introduction to reference books* (4), which incorporates much new material.

Government publications are always of particular importance in special libraries. S. Horrocks' pamphlet, *The state as publisher* (5), is a useful guide to H.M.S.O. publications, while a paper by J. L. Andriot (6) describes the bibliographical periodicals of the U.S. Government.

During the year two more volumes of the *Year's work in librarianship*, vols. XV and XVI (7) were issued by the Library Association, bringing this general survey over the whole field of librarianship up to 1949. The Royal Institute of British Architects published a useful series of bibliographies on library buildings (8).

Important bibliographical guides to special subjects were issued in the following fields : geography (9), geology (10), income and wealth (11), metallurgy (12) and statistics (13).

Library resources

Few special libraries can depend upon their own stocks alone, and guides to the resources of other libraries will save much time and trouble in locating material. Union lists of periodicals are both bibliographies and guides to library holdings and several were issued during the year. First in importance is the long-awaited third edition of the *World list of scientific periodicals* (14), containing 40 per cent. more entries than the previous edition, and listing the holdings of many more special libraries. Russian periodicals are a particular headache to many librarians, and a new check-list issued by the Library of Congress (15) is of great value as an aid to identifying them. A new and much improved edition of the *London union list of periodicals* (16) is useful for locating the more general periodicals which a special library does not usually hold itself but which it may quite often need to consult.

A list of chemical periodicals in Dutch libraries, by A. Gorter (17), in addition to listing many periodicals not included in other lists, contains a chronological table giving the volume numbers of a selection of the more important journals for each year since 1900, which is valuable when wrong references have been given. Owing to the speed and efficiency of the photocopying services of Dutch libraries, it is nearly as useful for obtaining material as a British list.

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Regional lists often offer a short-cut to the quick location of wanted material. In addition to the London list noted above, the following publications should be useful for their particular areas : *Students' guide ; methods and resources of libraries in the area of the Midland Division* (Association of Assistant Librarians) (18), *Periodicals currently received in the libraries of the North-West* (19), *A list of scientific periodicals in Glamorgan and Monmouthshire* (20). The Institute of Advanced Legal Studies has published a *Union list of Commonwealth law literature in libraries in Oxford, Cambridge and London* (21).

Sources of information

In information work knowledge of the main sources of specialized information is essential. H.M.S.O. has published a new edition of the *Guide to government libraries* (22). (The *Brief guide to the research activities of D.S.I.R. and the Research Associations*, though strictly speaking too early to be included in this list, should never be overlooked in any check-up on Government sources of information.) The South-Eastern Regional Library System has published a list showing the allocation of subjects under its subject specialization scheme (23), in which the subjects are much more finely divided than in the Metropolitan Special Collections scheme. The first volume of the third edition of *Index Bibliographicus* (24), prepared by Theodore Besterman for Unesco and the International Federation for Documentation, is a useful guide to abstracting services in science and technology.

It is not possible to list all new directories to sources of information, but the following may be noted : the *American library directory* (25), a directory of documentation centres and services in France (26), a gazetteer of agricultural and forestry research stations (27), and a list of institutions using the Universal Decimal Classification (28). Those wishing to check up on library personnel should remember the list of members* published in *Aslib Proceedings*, vol. 3, no. 3, and the directory of members of the Special Libraries Association (29).

Exchange of publications

In addition to purchase and loan, exchange is a frequent means of obtaining material in special libraries. The most important publication dealing with this subject was the Unesco *Handbook on the international exchange of publications* (30), though it suffers from being compiled from material collected two years earlier. The work of the British National Book Centre is described by C. D. Overton (31), and Mrs. A. D. Ball discusses the financial aspects of its American counterpart, the *United States Book Exchange* (32).

Information service

The value of libraries and information services to industry is always difficult to assess and much has been written on the subject. *The significance of information in present-day industrial society* was the title of a recent paper by Professor T. U. Matthew (33). Miss R. Vormelker has written

a good comprehensive survey for the information of the industrialist (34), and an article by C. L. Thomas points out how literature searching can eliminate unnecessary work and expense on research (35). J. B. Reed's paper on *Planning the library for the user* (36) is illustrated by diagrams and plans. B. C. Vickery has contributed a useful paper on the *Optimum use of staff in the small library* (37).

There have been several recent papers in *Aslib Proceedings* on the functions and characteristics of information officers as such, and in this connection it is useful to read the discussions which followed the papers by Professor Matthew and Dr. Urquhart at the 1952 Aslib Conference at Swanwick (38).

Training

Because of the many qualifications that he is expected to have, education and training are, perhaps, a bigger problem for the special librarian than for any of his colleagues in other types of library. One of the chief recent publications on training is the second volume of the *A.A.L. guide to professional examinations* (39), covering the Final Examination, though special librarians will regret that only a few of the papers on the literature and librarianship of special subjects have been covered. F. A. Sharr's presidential address to the Annual Conference of the Association of Assistant Librarians (40) attempts a re-assessment of the Library Association's examinations, while an article by Rippon and Foskett (41) points out the value to both student and practising librarian of the abstracts in the professional press. From America comes a description by Miss M. Gill (42) of a very efficient scheme of staff training in a special library.

Administration and records

In matters of organization the librarian can often pick up valuable hints from publications dealing with general office administration. A very full and well illustrated book, by F. M. Knox, on the *Design and control of business forms* (43) and a British Standard on certain types of commercial forms (44) can both be of use to special librarians. In the more specifically library field D. J. Campbell (45) describes the use of an inexpensive and efficient French visible index for the recording of periodicals, and a Spanish standard (46) sets out a simple method for the recording and control of in-coming books. Inefficient labelling of the drawers of card-indexes can waste time, as is shown in a short article by J. B. Reed (47). An article by Miss R. Boots (48) describes the preparation of a staff manual.

Cataloguing and classification

Much of the writing on cataloguing and classification is largely concerned with the theory of these subjects, but some of the year's publications can be singled out for their practical value. The Library of Congress issued an excellent guide to the use of subject headings by D. J. Haykin (49), while L. Jolley's account of the introduction of simplified forms of

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cataloguing at the Library of Congress (50) will be of interest to the special librarian ; so will Miss R. Jacobs' light-hearted account of the D.S.I.R.'s method of dealing with the works of corporate authors (51). The manual by Palmer and Wells on *The fundamentals of library classification* (52) is specially useful because it not only explains clearly and simply the theories of Dr. Ranganathan's Colon Classification, but also demonstrates how these theories can be applied by the classifier to other classification schemes. The special problems of classification and indexing in a textile library are described by E. B. Uvarov (53).

Document reproduction

Document reproduction is a subject of major importance to special libraries, and over the past year there has been much discussion of the rival claims of the various processes. In particular, although the opaque microcard is not yet a practical proposition outside the United States owing to the lack of reading machines, there has been much dispute over the suitability of the various forms of microcopy. H. R. Verry, of the Organization and Methods Division of H.M. Treasury, was commissioned by Unesco to study this problem, and produced a report for the Rome conference of the International Federation for Documentation (54), which was followed by another on practice in the United States (55). These reports were summarized by J. J. Bastardie in two articles in the *Unesco Bulletin for Libraries*, which were later issued as a reprint (56), while Mr. Verry further expounded his ideas at an Aslib Winter Meeting (57).

In the United States both microcard and microfilm are used as auxiliary methods of publication, as described in papers by M. B. Morgan (58) and E. B. Power (59). High reduction microfilm is also used for the reproduction of newspapers, and a statement by the American Library Association Committee on Photo Duplication (60) stresses the necessity for using only the highest quality materials for such work. In the field of full-sized copying, the increased development of newer processes, such as diazo copying, has given rise to a similar need for a re-assessment of the various processes. A report issued by the Admiralty on an investigation conducted by the Organization and Methods Division of the Treasury (61) gives comparative costings for a number of processes. Owing to the basis on which the investigation was conducted, the figures given in the report are lower than those which would hold in normal use, but the relationship between the different processes is correctly assessed.

Mechanization in libraries

Considerable interest in the use of punched cards and other mechanical devices is reflected in the year's literature. The important volume on punched cards, edited by Casey and Perry (62), gives excellent accounts both of the machines and their applications to all types of information work, and summarizes the work of several years in this field. It was followed by books on other aspects of the use of punched cards by McGaw (63) and Parker (64). Many British librarians, however, are

doubtful of the value of punched cards, and two papers have pointed out their drawbacks : H. D. Ashthorpe (65) gives an account of the reasons for the discarding of punched cards by the Information Department at Harwell, while B. C. Vickery (66) indicates fallacies in some of the most popular arguments in favour of mechanical selection.

Care of books

Binding and the repair of books are always current problems. The American Library Association has issued a library binding manual (67) which gives much useful advice. A paper by A. W. McKenny Hughes (68) describes various insects which attack books, and means of protection against them.

Patents and maps

Patents constitute one of the most important of the miscellaneous items which form part of the stock of special libraries. H. R. Mathys (69), a patent agent, and E. M. Bennett (70), a patent examiner, gave a valuable account of patents to an Aslib Winter Meeting. A. Rosenblum (71) has described them from the Australian angle. Manchester Public Libraries have published a useful account of their patent collection (72). A good description of another type of special material, maps, is given in a paper by G. Williams (73).

Translating and translations

The making and commissioning of translations is one of the many miscellaneous jobs which fall to the lot of the special librarian. Recently, in order to reduce the considerable expenditure that translation involves, central indexes of translations to eliminate duplication have been set up in several countries, and these are described in articles in the *Library of Congress Information Bulletin* (74) and the *Unesco Bulletin for Libraries* (75), while J. G. F. Bellamy has given a fuller description of the setting up of the Commonwealth Index at Aslib (76). Translators should note the useful Library of Congress list of Russian abbreviations (77).

Dictionaries published in 1952 include a French-English, English-French dictionary of medical and biological terms (78), a German-English, English-German glossary of library terms (79), and von Ostermann's *Manual of foreign languages* (80). From the point of view of the librarian it should be noted that this last-mentioned work has information on capitalization and syllabication in various languages and notes on 'Articles to be disregarded in filing'.

Reports and publications

The special librarian may also be required to advise the scientific staff he serves on the writing of reports, and he will find the book by Trelease (81) very useful. Special librarians are often responsible for the publications of the bodies they serve, ranging from staff bulletins or house journals to the official journals of learned societies. Vincent Steer (82) writes on the planning of booklets, G. C. Bogle (83) on the

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production of a house journal, and H. M. Silver (84) on the financial aspects of learned society publications. The inexperienced librarian/editor may like to be reminded of the *Cambridge authors' and printers' guides*, a series of useful pamphlets which began publication in 1951. The 1952 additions to these were on *Notes and references* (85) and *Copyright* (86). Earlier titles included *First principles of typography*, *Preparation of manuscripts and correction of proofs* and *Making an index*.

Last, but by no means least, mention should be made of the important new library periodical *Library Trends* (87), issued by the University of Illinois Library School. It is published quarterly, and each issue is devoted to a single branch of library work, and consists of a series of well-documented articles, each reviewing recent developments in a particular aspect of this subject. The only issue received in this country during the year under review was devoted to university and college libraries, but a whole issue on special libraries is promised and many others will undoubtedly contain much of interest to special librarians.

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INTERNATIONAL U.D.C. DEVELOPMENTS IN 1952

Report of the meetings of the International U.D.C. Committee and Sub-committees during the conference of the International Federation for Documentation held in Copenhagen, 29th September to 4th October, 1952.¹

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THIS F.I.D. restricted conference was, from the point of view of the U.D.C., almost too ambitious in its programme, considering that meetings of the Council and of the experts on building classification were held concurrently throughout the week. Inevitably, the more general topics, such as classification rules (section 1) and notation principles (section 2), received rather scant attention, but the results from many of the U.D.C. special Sub-committee meetings showed that they had laid an excellent basis for greatly improved work and more rapid development in the future.

Outline reports (section 4) were prepared in time to be considered by the main Committee on Universal Classification when it met in full session on the last (Saturday) afternoon, with no less than thirty-one representatives from eleven countries.

With so much activity in these special fields, it was hardly surprising that the discussions on classification rules and notation principles had to be combined in one short meeting held on the Friday afternoon, and this meant that justice could not be done to the interesting papers submitted by Dr. Ranganathan (India) and Dr. E. Wüster (Austria), both of whom were unable to attend.

1. CLASSIFICATION RULES (F52-53)

The Central Classification Committee (C.C.C.) recommended reference back to the Netherlands National body (N.I.D.E.R.) Parts 1 and 2 of the draft rules, for redrafting in the light of the comments by Dr. Ranganathan and others (F52-70 and *optional facets*, 9), and this action was approved by the main Committee. It was pointed out that Part 3, which laid down rules of procedure for U.D.C. development and revision work, was the section of most immediate importance, and the C.C.C.'s recommendation to circulate this with some additions was also approved by the Committee. The hope was expressed that it might be possible to redraft Parts 1 and 2 in line with Dr. Ranganathan's suggestions, in time for the next meeting of the F.I.D. in Vienna next year, and M. Dubuc stated that he would consult the French national member body (U.F.O.D.) with a view to securing the co-operation of a specialist who would be willing to enter into correspondence with Dr. Ranganathan and N.I.D.E.R.

¹ A limited number of copies of the full report, CO(OC)5887, are available from the British Standards Institution, 24 Victoria Street, London, S.W.1.

2. NOTATION PRINCIPLES (F52-63)

The views expressed by the meeting on notation were considered at the full session of the main Committee, at which Dr. Wüster (Austria) stated that he would like to see some of the difficult problems of U.D.C. notation much more thoroughly discussed before any final decision was taken on the recommendations to be made. It was pointed out that, although the Committee was, in fact, the final arbiter in U.D.C. matters, no one would wish to force through any of the decisions on a simple majority vote, since the whole future development of the U.D.C. must depend largely on the unanimity, or near unanimity, and conviction with which the users in every country accepted and applied them. In each country, it was up to the national U.D.C. Committee, if it had not already done so, to arrange for a thorough discussion of the problems under consideration.

(a) Sequence of auxiliaries

Dr. Wüster regretted that there had been no serious preparatory discussion on the order of choice and filing sequence of auxiliary numbers, and it was generally felt that further consideration should be given to these problems before any final decision could be reached. The Committee, therefore, agreed to refer these outstanding points to a special working party on U.D.C. auxiliaries, for which Dr. Wüster himself kindly consented to be co-rapporteur. It was suggested that Dr. Wüster should enter into correspondence with the members of the Central Classification Committee and any others interested and, on the basis of the views expressed, make definite recommendations for circulation to all national U.D.C. committees at least two months before the Vienna Conference (scheduled for June or July, 1953). Dr. Wüster accepted this solution and said that he would try and prepare a report in good time for Vienna.

(b) The + and / signs

After a short discussion, the Committee agreed that the + sign should be eliminated, but that the / sign, despite certain disadvantages for filing and the difficulty of using auxiliaries with it, should be retained as a valuable shorthand device. In future revision, however, the need for its use could be gradually diminished by giving an inclusive significance to the first number of a continuous series.

The + sign, on the other hand, had little to recommend it, and its elimination was approved for the reason that numbers hitherto connected by + could equally well be written one below the other. The suggestion to replace + by the words 'and', 'et', 'und', 'og', etc., was not favourably received, though it was recognized that the use of & (ampersand) might be quite feasible in some (especially Anglo-Saxon) countries.

(c) New ' sign (apostrophe, or single quote)

The Netherlands delegate supported the proposal in F52-63 and

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proposed that the ' sign should be adopted in the U.D.C. as a sign for synthesis or integration, as distinct from the - (hyphen) sign for analysis or differentiation.

It was pointed out that the sign might later prove useful in several parts of the U.D.C., but that its use should at present be limited to the chemical field, and in particular to the section 678.6 Polycondensation compounds, where it had already been proposed in PE 510.

A Swedish delegate agreed that the use of the sign might later be extended, but urged that it should not be used to designate alloys under 669, where the existing notation was quite adequate.

The Committee generally approved the recommendation to incorporate the ' (apostrophe) sign into the U.D.C.

3. NEW U.D.C. SUB-COMMITTEES

After discussion and agreement in the Central Classification Committee, it was decided to set up a number of new U.D.C. special sub-committees, and the main Committee in full session approved the formation of the following :

- (a) 32 *Political science, international and constitutional law*
341/342 Rapporteur : Prof. Arntz (Germany)
- (b) 4 *Philology and linguistics*
 Acting rapporteur : Dr. F. Lang (Austria), pending closer contact with the Permanent International Committee of Linguists, with whom co-operation would obviously be desirable.
- (c) 65 *Office practice, business management, etc.* (particularly 651, 658, 659)
 Rapporteur : M. Lampel (France)
 Co-rapporteur : M. G. Friedländer (Switzerland)

(d) The Committee also agreed in principle to the formation of a F.I.D. Sub-committee on Photography and other reproduction techniques, but there were no volunteers for the post of rapporteur.

(e) A German delegate drew particular attention to the fact that in Germany the U.D.C. was now being used extensively with punched cards, and suggested that this might be a valuable field of investigation. It was pointed out, however, that a new committee had just been set up in Copenhagen to deal with all problems relating to the use of punched cards, and the Committee agreed that this new 'Punched Card Committee' was the proper body to study the application and development of the U.D.C. for this purpose.

4. REPORTS OF THE MEETINGS OF U.D.C. SPECIAL SUB-COMMITTEES

It was clear from the statements made by the individual rapporteurs that there had been considerable activity on the part of the special Sub-committees, and that most of these had achieved really worth-while

results, which would soon be reflected in considerable improvements in many parts of the U.D.C.

(a) *Administrative sciences* 35/36

The rapporteur, M. Dubuc (France), acknowledging the great interest shown by the Association of Danish Municipalities, at whose headquarters the Sub-committee had met, explained that they had concentrated on trying to find ways of unifying the diverse methods of U.D.C. application operated by municipal administrations and local government departments in Belgium, Denmark and the Netherlands, the three countries in which the U.D.C. had been most widely and systematically adopted for classifying archives and public records.

M. Dubuc, in his report F52-73, had already emphasized the difficulties to be faced in trying to apply the U.D.C. to archives and records, which presented problems quite distinct from those encountered in classifying books and other documents with thematic or subject content. It was agreed that it would be impracticable to attempt too much at first, and the Sub-committee had, therefore, decided to confine itself to the three following sections :

- 35.08 Personnel and staff, grades, etc.
- 35.07 Administrative bodies, municipal authorities
- 35.1 Administrative functions

Of these, the section on which there was most agreement at present was 35.08, which was of interest, not only to municipal, but to all administrations, and it was, therefore, agreed to conduct as wide an enquiry as possible, in co-operation with the Union internationale de Villes and the Institut international des Sciences administratives, in order to ascertain the extent to which 35.08 was now being used, and the special problems confronting users in different countries.

Meanwhile, the editors of the Belgian, Danish and Dutch schedules for 35 would try to effect suitable compromises in an effort to eliminate, or at least minimize, the difference in their respective editions. This would be done in consultation with the F.I.D. Central Secretariat, MM. Dubuc (France), Lorphèvre (Belgium) and Rickli (Switzerland), so that an agreed schedule could then be submitted as a model to all administrative authorities interested.

The main Committee approved this course of action, and recommended that national member bodies should try to establish working groups in their own countries, or at least furnish the names of interested bodies or individuals, who could collaborate in this programme.

(b) *Measurement and control*

This Sub-committee, having been only recently established with the Netherlands national body (N.I.D.E.R.) as rapporteur, held its first meeting in Copenhagen. As was to be expected with a subject of this nature, highly specialized but with applications in so many different fields, the meeting concerned itself chiefly with questions of scope and practical

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requirements, and it was generally agreed that a great deal of preliminary investigation would have to be undertaken before any definite development and revision of the U.D.C. could be begun. The subject was still in its infancy, the scope relatively ill-defined, and there appeared to be as yet no clear-cut consensus of opinion on what were the requirements of a good classification in this field.

The Sub-committee, with Dr. A. W. J. Mayer (Netherlands) in the chair, therefore, agreed on a broad programme, based on the following points :

(i) In each country participating preliminary enquiries should be undertaken as to what the experts there understood by 'control' (scope, field of application, etc.), and a list made of the national requirements for a classification of 'measurement and control'.

(ii) On the basis of these national lists, N.I.D.E.R as rapporteur would compile a collated list of requirements, and attempt to arrive at a clear definition of the scope of this subject.

(iii) Simultaneously, the U.D.C. would be combed systematically to provide a list of all existing sections in which measurement and control could be considered to play a role.

(iv) Then, and only then, would it be possible to contemplate the preparation of U.D.C. drafts in special fields, based on a division of labour amongst the members of the Sub-committee.

(c) *Classification of materials*

The rapporteur, Mr. Einar Öhman (Sweden), stated that the principal proposals contained in his paper for the 1951 Rome Conference had been widely accepted and endorsed by the representatives of eight countries at the meeting of his Sub-committee, and there was now a workable basis for ensuring uniform and consistent classification of documents containing information on materials.

The only serious objections received were in connection with the proposed subdivisions of 620.2, and these were reviewed during the detailed discussions on the classification of general works on materials. It was recognized that there are two distinct types of general work, conveniently characterized by the German words 'warenkunde' and 'stoffkunde'. The present separation of these under 620.2 and 66.017 was regarded as unsatisfactory, and there was some talk of transferring both types into adjoining subdivisions of 6 itself, possibly 601 and 602. The Sub-committee decided, however, to confine itself for the time being to recommending uniform practice involving no far-reaching changes in the schedules. The two existing subdivisions of 620.2 were felt to fill no useful purpose, and their cancellation was recommended.

The problem of providing a suitable auxiliary notation to designate 'made of . . . (material)' and 'used for . . . (materials)' was discussed jointly with the Mechanical Engineering Sub-committee, and —03 and —04 were among the feasible solutions proposed. No final decision was taken on this, however, because at the meeting of the main

Committee, it was reported that proposals for —o numbers were expected from the 621.3 Electrotechnical Sub-committee, and it was in any case desirable to ensure that all —o auxiliaries when finally established should be applicable to as many parts of the U.D.C. as possible.

The Committee approved the report of the Sub-committee's meetings and accepted its resolution were given in abbreviated form :

Recognizing the need for uniform and consistent classification of information on materials, the Committee has decided :

- (a) to agree on certain general principles of classification
- (b) to make certain changes in the schedules
- (c) to study in detail the pertinent parts of the U.D.C. and publicize at an early date clear instructions and examples.

The Committee, therefore, makes the following recommendations :

(i) Every material must have a principal number, which should always be used when a document contains specific information on its properties and use.

(ii) The present method of classifying most materials under 66 and 67, the numbers for their manufacture, is satisfactory and should be adhered to, using .017 to distinguish properties from processes.

(iii) By analogy, natural products should be classified under the numbers for their exploitation, harvesting, etc., i.e. mineral under 622.3, vegetable under 633/635, and animal products under 637/639, so that, for instance, wood as material should be under 634 and not 674.

(iv) Secondary numbers, indicating utilization as raw material, should be used with caution and never subdivided in detail ; new ones should not be introduced and the existing ones gradually eliminated.

(v) An auxiliary should be introduced to denote 'made of . . .' applicable at least throughout section 6, the actual material being specified by colon ; direct decimal subdivision of articles should be gradually eliminated in favour of the new principles.

(d) *Mechanical engineering, 621*

In the absence of M. de Novar (France), who was unable to remain for the final meeting of the Classification Committee, the report was read by Mr. J. P. Saville (U.K., Iron and Steel Institute), who accepted the post of co-rapporteur to this key sub-committee. The urgency of the task of finalizing the revision of 621 had already been stressed by the editor of the fifth edition (M. Lorphèvre) who, like the editor of the fourth edition (Mr. Lloyd), was most anxious to proceed with its publication. The particular importance attached to sections 621.719 was demonstrated by the submission of a British revision summarizing and, to some extent, modifying the proposals discussed in Paris (24th-25th April). This British draft was closely studied by the Sub-committee, who recommended acceptance of all its proposals with the following exceptions :

- 621.71 The suggested transfer of the concepts under 621.75 into an expanded 621.71 was rejected as not essential.

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- 621.72 would include also dies for forging and press-working under a new subdivision 621.726.
- 621.74.045 should be retained for 'Investment moulding, lost wax process' rather than 621.744.59.
- 621.744.7 would be established as a new number for 'Permanent (metal) moulds', the existing subdivision 621.744.34 being cancelled.
- 621.762 would be retained for 'Powder metallurgy' (as Pf 431) so as to avoid further confusion by yet another change of place.
- 621.772.9 would be established as a new number for 'Punching', which should be deleted from 621.96, and 621.963 altogether cancelled.

It was agreed not to cancel 621.82/.85 for the present, although all machine parts and elements would be grouped together under 62-2, for ultimate application throughout the whole of 6. A revision of 621.88 'Fixings and attachments' was also highly desirable, and it was agreed that this might be done under 621.81 when this becomes free again.

Considerable work still remained to be done under the - (hyphen) subdivisions, and some of the other sections of 621, and the Sub-committee agreed that the rapporteur should allocate tasks to various countries.

(c) *Electrical engineering*,¹ 621.3

The Chairman of the International Classification Committee for Electrical Engineering, M. Frachbeourg (Switzerland), gave a condensed report of the proceedings of this Sub-committee, which held several sessions before, and during, the meetings of the F.I.D. Council and other special committees. Perhaps the most important decision was the setting up of a special panel on telecommunications with the aim of developing this part of 621.3 in co-operation with the Union Internationale de Télécommunication and its three constituent consultative committees and with the interested departments in different countries. At its first meeting, the telecommunications panel agreed on a division of labour into three main sections—telephony, television and quality of reception, etc.—with Messrs. Griffiths (British P.O. Engineering Dept.), Beck (I.E.E.) and Moulijn (Netherlands) provisionally appointed rapporteurs. A second meeting would be held, if possible, in London.

The main 621.3 Sub-committee achieved certain important practical results, thanks largely to the sustained efforts of Mr. Beck and other members of the British panel over the past few years in close collaboration with the International Secretary, Mr. Moulijn, and the Dutch, German, Italian, Swiss and other national groups.

- 621.32 A small working party, after failing to agree on the (Lamps) British proposals for 621.327, accepted certain criticisms

¹ For detailed report, see CO(OC)5888 [B.S.I.].

of the .032 numbers advanced by the Germans, and reached a compromise solution embracing most of the German group headings, but deleting some of the text which appeared likely to create confusion.

- 621.37 A definite decision, in face of considerable German and Italian opposition, was at last reached which would enable the Secretary within three or four months to submit to the F.I.D. a finalized version of PP 10 (technique of electric waves, oscillations and pulses) for publication as a PE-note.
- 621.396.67 The British proposals on Aerials and Radar were being
621.396.96 sent to the F.I.D. as international proposals.

(f) *Chemistry and chemical technology, 54 and 66*

The rapporteur, Mr. Erwin Engel (Sweden), announced that this Sub-committee had thoroughly discussed all the subdivisions of 54 and 66 and agreed on a broad programme of work involving the immediate introduction of certain urgently needed modifications and more drastic rearrangements of several sections in the future. Such changes would have to be reduced to a minimum, but some parts could not be retained in their present antiquated and incomplete form, if they were to be of any real use, both to present and future users. It was also pointed out that, in the revision of certain sections, such as 543/545 Analysis, it would be possible to set free some now occupied numbers for future recasting of 547 and other sections needing drastic attention.

Basing itself largely on the rapporteur's review which had been circulated prior to the Copenhagen meetings, the Sub-committee outlined the following plan :

- 542 *Laboratory methods, apparatus and equipment.*
Stricter parallelism with 660 should be established, especially between 542.9 and 660.9, which require a number of extensions and modifications.
- 543/545 *Analytical chemistry, sampling and technique of analysis.*

Two alternative revision schemes would be submitted by the British Standards Institution—a less drastic one, retaining 543 more or less intact, but incorporating the existing 545 subdivisions into 544 and using an auxiliary to distinguish between the concepts 'qualitative' and 'quantitative' (and possibly also 'micro'); and a more drastic one, in which the 544 and 545 subdivisions would be brought under 543, again using auxiliaries in the same way. Bearing in mind that the first alternative would free one number 545, and the second one two, 544/545, for possible future recasting of 546 and 547, the Sub-committee would compare the two versions and decide whether the more drastic one was justified.

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- 546 *Inorganic chemistry.*
Revision of the present 546 would have to be undertaken, especially in respect of isotopes and of the intermetallic compounds for which no suitable provision is made under 669. Here, as well as in 547, the suggestion to introduce the ' (apostrophe) for chemical combination and synthesis might well prove practicable.
- 547 *Organic chemistry.*
The Sub-committee agreed that a long-term programme of drastic recasting was essential and should be entrusted to the 547 committee of N.I.D.E.R. Meanwhile, certain urgent changes in the existing 547 should be introduced along the following lines :
Use of ' (apostrophe) notation for building up organic compounds from radicles or elementary groups ; and use of - (hyphen) subdivisions applicable throughout 547, to indicate position of substituents, etc.
- 660 *Chemical engineering, processes and unit operations.*
It was agreed that the .0 subdivisions should be gradually converted into main 660 numbers wherever they represented basic operations, and that a short series of simple - (hyphen) auxiliaries might be established for subsidiary concepts such as plant and equipment and reagents and raw materials, etc., each of which would be subdivided in detail only by colon.
- 662 *Explosives.* Mr. Engel would himself take responsibility.
Fuels. Sections 662.6/.9 would be worked out by B.S.I. in collaboration with Herr Floss and other German experts.
- 663/664 *Beverages, stimulants and food technology.*
These would be the responsibility of the British group (B.S.I.), whose recently prepared revised draft should form the basis of comments and criticisms.
- 665.1/.3 *Fatty oils and waxes.*
N.I.D.E.R. would review this field and prepare an entirely new classification, probably under 665.6/.7 (free), incorporating soaps, glycerol, etc., from 668.1/.2.
- 666.1/2 *Glass technology.*
Dr. Fill (Deutsche Glastechnische Gesellschaft) would act as rapporteur, in close touch with the B.S.I. and the Society of Glass Technology.
- 666.3/.7 *Clayware and ceramics.*
The Finnish group (Mme Wartiovaara) undertook to study these sections with Prof. Salmang and other experts.
- 666.8/.9 *Gypsum, lime and cement : plasters, compositions, concrete.*
The British draft, with drastic proposals for modification, would be discussed jointly with the newly formed Building Classification Committee.

667 *Colour industries : dyes, inks, paints.*

The paint, lacquer and varnish sections 667.6/8 badly needed finalizing, and this task was accepted by the German group (Dr. Manfred Richter).

668.1/.2 *Soaps, glycerin, etc.*

These would be transferred under 665, q.v.

668.7 *Tar industry.*

This would be transferred under 662.7.

669 *Metallurgy.*

Mr. E. Öhman (rapporteur of the Sub-committee on Materials) undertook to study outstanding problems in the metallurgical field with the collaboration of British and German experts.

(g) Building and architecture

Two important achievements were reported by Architect Dan Fink (Denmark), chairman of the meetings between representatives of the F.I.D. and the C.I.D.B. (International Council for Building Documentation) which took place concurrently throughout the Conference week in the Danish Academy of Arts.

First, there had been an amicable settlement of what at one time had looked like developing into a serious controversy, namely the problem of an agreed 'selection schedule' of U.D.C. numbers for building documentation. This had been achieved largely by the great efforts (though unorthodox procedure) of Messrs. L. M. Giertz (Sweden) and Mølgaard Hansen (Denmark) on the one hand, and the constructive criticism of Mr. Agard Evans (Britain) and Miss Clara Müller (Germany) on the other—with strong support, often very active, from other building and planning experts, and a great deal of goodwill all round. Using the second draft ABC selection, prepared by the Scandinavians, the experts had virtually completed a detailed scrutiny of it; comparison with the Ministry of Works schedule 3X, prepared by Mr. Agard Evans, and with the existing U.D.C. full tables had resulted in a very promising document which, with a little tidying up and the provision of an alphabetical index of subjects (also by Mr. Evans and his Ministry of Works colleagues) would, undoubtedly, fill a long-felt want for the classification of abstracts and similar documents in busy practitioners' and firms' offices.

Second, perhaps even more important for future work, had been the proposal to form a joint F.I.D./C.I.D.B. committee on classification, to be known as the International Building Classification Committee (I.B.C.C.) The terms of reference had already been drafted, and its status and constitution were approved by the F.I.D. in the final session of the Conference. Official C.I.D.B. approval was expected from the Executive Committee Meeting at the end of November, 1952, but it was agreed that the joint committee should work provisionally until then.¹ From four

¹ Slightly modified terms of reference have now been agreed by both F.I.D. and C.I.D.B.

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members nominated by the F.I.D. Council, and four provisionally representing the C.I.D.B., Messrs. Giertz and Agard Evans were elected Chairman and Vice-Chairman, and Mr. Mølgaard Hansen Secretary. In addition, to facilitate intercommunication, there would be a small secretarial group consisting of the Chairman, Secretary, Miss Clara Müller and Messrs. Lloyd and Lorphèvre.

5. REVISION OF OTHER U.D.C. SECTIONS

A number of other points were considered by the Central Classification Committee (C.C.C.), and it was regretted that it had not been possible to arrange a meeting of the special Sub-committee on 615 Pharmacy set up at the Rome Conference in 1951. It was hoped that this might be held during the next meeting in Vienna.

63 *Forestry*

After long delays and recent discussions with the Commonwealth Forestry Bureau in Oxford, the British Standards Institution had submitted a proposal for the re-development of the U.D.C. forestry section 634.9 on lines more closely following the now widely adopted 'Oxford system', and it had been suggested that 630 would be the most suitable number, regarding both degree of importance and position, for a subject so vast and important as to be comparable with Agronomy, 631. The C.C.C. debated this at its meeting, agreed that a really sound classification was urgently needed and accepted in principle the idea of incorporating into the U.D.C. the strictly 'forestry' parts of the Oxford system, but preferably not under 630, which the majority of the C.C.C. felt should be retained for concepts of general application to Agriculture. In disassociating himself from this majority viewpoint, the British representative regretted the decision to perpetuate the grouping of Forestry as a sub-division of Arboriculture, but promised to explore other possibilities in the hope of finding a suitable main number which would not only satisfy existing U.D.C. users, but also attract the increasing number of forestry specialists who were turning to the Oxford system. At the same time, it was agreed that a skeleton draft should be prepared under 63f, incorporating those parts of the Oxford system which dealt with silviculture and other branches of forestry proper, but excluding details of management and administration, botany, zoology, etc., which already had their places in the U.D.C. This draft, if universally approved, could then be fitted into a finally agreed place under 63.

(4) *'Geographical' auxiliaries for Finland, British Isles, etc.*

In response to repeated requests from Finnish members, it was proposed that the auxiliary for Finland should be altered from (471.1) to (480), thus bringing the four Scandinavian countries together—on geographical as well as politico-administrative grounds. There was some opposition to this by C.C.C. members, who felt that Finland was but one of many such countries, of which Poland, Czechoslovakia, Austria, Hungary and Luxembourg were even more glaring examples, but it was emphasized that the case for the transfer of Finland was also geographical.

(42) A proposal from the British Standards Institution that (42) should be established as the official number for the British Isles, with subdivisions of (42-4) for the United Kingdom and the British Commonwealth and Empire, was also approved. It was noted that these would replace (41) and (410), which would be cancelled, but that the subdivisions (411) to (419) for Scotland and Ireland and (421) to (429) for the English counties and Wales would have to be retained, at least for the present, because of the strong opposition from some users in this country to their total transfer under (420) or (42*). The British U.D.C. Committee would be discussing this matter much more thoroughly in the near future, and it was hoped that a definite recommendation would be the outcome.

6. PLACE AND DATE OF NEXT MEETINGS OF THE COMMITTEE

The F.I.D. Council having accepted an Austrian invitation to hold next year's F.I.D. Conference in Vienna, probably in June or July, it was expected that at least one or two of the U.D.C. Special Sub-committees would take advantage of the occasion to arrange meetings there also. Details would be made available later, but meanwhile each rapporteur could assess the need for a special meeting of his group. In particular, it was thought that the newly formed Sub-committees (section 3) might be glad of the opportunity to hold their first meetings in Vienna.

TRIBUTE IN RETROSPECT

An important factor contributing to the undoubted success of the Copenhagen Conference—so far as the U.D.C. was concerned at least—was the really excellent organization by the Danish National Committee. Both on and off the scenes, our genial and generous hosts, headed by the Federation's President, Dr. Arne Møller, and his indefatigable colleagues of the Tekniske Bibliotek, did all that was possible to ensure the smooth running of the meetings: by providing minutes secretaries, and even interpreters when needed; by arranging for speedy and accurate typing and reproduction of working documents; and, not least, by making available excellent facilities for enjoying, at reasonable cost, the pleasures of Danish beer and smørrebrød!

Almost every day was the occasion for some form of instruction and entertainment—a mass visit to the Opera House, excursions to Elsinore and to a Swedish ceramics factory (via Malmö), and group visits to various chemical, electrical and other works in and around Copenhagen.

Parallel with these activities were the special meetings and visits for the experts on building classification. These were organized by the Danish Building Documentation Committee, whose genial Chairman, Arkitekt Dan Fink, also gave an informal dinner party at his home, where the assembled company (including all the members of the Central Classification Committee of the F.I.D.) were initiated into some of the admirable Danish customs and traditions!

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This was altogether a most enjoyable conference, and one which gave definite results in U.D.C. development. To our very generous hosts, who did so much to make it so, must go the thanks of all who participated, and of the many U.D.C. enthusiasts who did not.

STANDARDS IN DOCUMENTATION

Extracts from an unofficial report of the meeting of Technical Committee 46 (Documentation) of the International Organization for Standardization (ISO), held in Copenhagen, 6th to 8th October, 1952¹

By G. A. LLOYD

British Standards Institution

REPRESENTATIVES of the following thirteen countries participated :

Austria	France	Spain
Belgium	Germany	Sweden
Denmark	Italy	Switzerland
Finland	Netherlands	United Kingdom
		United States

Also participating were observers from Unesco, and from the following international organizations :

C.C.D.S.S. Co-ordinating Committee for Documentation in Social Sciences.

C.I.D.B. International Building Documentation Committee.

F.I.D. International Federation for Documentation.

I.F.L.A. International Federation of Library Associations.

The United Kingdom delegate, Mr. G. A. Lloyd (B.S.I.), attended all the main Committee sessions and the meetings of the working groups on Layout of Periodicals and Transliteration of Cyrillics. He was unable to attend the special meeting of the Sub-committee (SC1) on Documentary Reproduction (second day), although present at the main Committee's final session, at which the Sub-committee's recommendations were briefly discussed (see p. 59).

The meetings, which were held on the premises of Dansk Industriforeningen, began on the morning of 6th October and lasted three full days. The participants were welcomed at the opening session by the Director of the Dansk Standardiseringsraad, Mr. H. E. Glahn, who proposed that the Chair should be taken by Dr. N. A. J. Voorhoeve (Netherlands). This was unanimously agreed, and Dr. Voorhoeve ably presided over both plenary sessions on the first and last days.

The whole of the second day and the morning of the last day were given over to simultaneous meetings of the Sub-committee on Documentary Reproduction (SC1) and of the three *ad hoc* working groups

¹ A limited number of copies of the full report, CO/OC/5886 are available from the British Standards Institution, 24 Victoria Street, London, S.W.1.

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formed for the purpose of making recommendations to the main Committee on the following subjects :

- A. Abstracts and Synopses (ISO/TC 46 doc. 192 and *Unesco Guide*).
- B. Layout of periodicals (2nd draft ISO Recommendation 3, doc. 157), Contents (ISO/TC 46 doc. 171), Bibliographical strip (ISO/TC 46 doc. 172), Layout of articles (ISO/TC 46 doc. 191).
- C. Transliteration of Cyrillic characters (first draft ISO Recommendation 6, and British emendation ISO/TC 46 doc. 204).

1. *Unesco-ISO contracts : use of grants to ISO/TC 46 and SC 1*

The Secretariat reported that a contract had been signed between Unesco and ISO granting ISO/TC 46 a sum of \$500 to assist in the more rapid completion of work on bibliographical subjects of primary importance, namely :

Code for abbreviating titles of periodicals

Layout of periodicals

Bibliographical citations

Bibliographical references

and that a further sum had been put at the disposal of the Sub-committee on Documentary Reproduction.

Of the \$500 grant for bibliographical subjects nearly \$300 had already gone towards defraying the costs of the special meeting of experts in The Hague (25th-26th August), as a result of which the two draft proposals on Citations and References had been carefully re-edited for the Copenhagen meeting. In agreement with Unesco Libraries Division, the Secretariat now proposed that the remaining \$200 or so might be used to publish, in the form of a report to Unesco, a document combining the four drafts listed above. The Committee accepted this proposal and agreed that the co-operation of the F.I.D., I.F.L.A. and other interested organizations should be sought with a view to ensuring the widest possible distribution of this report for comment and criticism (collective in preference to individual). This would increase the application of the future ISO recommendations or standards by giving them the added authority of these organizations.

As to the further sum put at the disposal of ISO/TC 46/SC 1, the Committee agreed in principle to the allocation proposed by the Sub-committee on the understanding that details would be set out in the detailed official report of the Copenhagen meeting. In particular, it approved the Sub-committee's proposal that a proportion of the grant should, in any case, be used to organize early in 1953 a meeting of a working party of experts on microfilm readers, representing member bodies in those countries actually manufacturing and selling readers, and that every effort should be made to induce manufacturers to collaborate in the exhibition of readers which it was intended to hold simultaneously with the meeting.

2. *Code for abbreviating titles of periodicals*

The Committee was reminded that this draft had been in preparation since the Hague meeting in 1948 and had been circulated to all ISO member bodies without incurring much criticism. There was still apparently some feeling that a selected list of conventional contractions (sigles) should be appended, but the Committee recognized that the inevitable disagreements on what should or should not be included would only delay the publication of the much needed Code of general rules, and it therefore decided to submit the document in its present form to the ISO Council for official acceptance as an ISO recommendation.

3. *Layout of periodicals and related items*

At the opening session, the Committee appointed an *ad hoc* working group to try to incorporate as many of the comments as possible which had been received on the second draft ISO recommendation, particularly the very detailed ones from Committee Z.39 of the American Standards Association. Under the able guidance of M. Lorphèvre (Belgium), the group completed this formidable task to the satisfaction of the Committee, who authorized the Secretariat to amend the draft ISO recommendation accordingly and to include it in the report to Unesco as already agreed (section 1). It would thus receive a very wide distribution, enabling the Secretariat, if no serious adverse comments were received, to submit it by mid-March to ISO Council for acceptance as an ISO recommendation.

Also referred to this working group were a number of other items relating to the layout of periodicals :

Bibliographical strip (Manchette bibliographique), Contents lists of periodicals (Sommaries), Indexes and Tables of contents (Table de matières).

Layout of articles for periodicals (see section 6).

The group agreed that some at least of these were applicable also to books, but decided to consider them only in connection with periodicals, at least for the time being. Even so, the only items which could be given detailed attention were the drafts for 'Bibliographical strip' and 'Contents lists', which, after modification, were approved by the Committee for circulation as first draft ISO recommendations.

4. *Bibliographical citations. Bibliographical references*

The preparation and completion of these two drafts had been greatly accelerated by the *ad hoc* meeting of experts in The Hague on 25th and 26th August, for which, as explained in section 1, a little more than half of the Unesco grant of \$500 had already been used, but there was unanimous agreement that the rapid completion of these two drafts had amply justified this expenditure.

The Unesco observer, Mr. H. Campbell, asked leave to propose a few

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slight modifications but, as these were not of a fundamental but more of an editorial nature, it was agreed that they could be dealt with satisfactorily by the editing committee before circulation. On the proposal of the U.K. representative, the Committee then accepted both documents ISO/TC 46—202 and 203, as first draft ISO recommendations, to be included in the report to Unesco with the recommendations on 'Abbreviating titles of periodicals' and 'Layout of periodicals'.

5. *Transliteration of Cyrillic characters*

Faced with the still unsolved problem of the Cyrillic character X and a number of relatively minor criticisms of the draft ISO recommendation No. 6, the Committee appointed an *ad hoc* working group consisting of six members to try to work out some sort of feasible solution which would stand a chance of being accepted by the majority of ISO members, along the lines laid down in the British table CO(OC)3859, pp. 3-4, forming part of ISO/TC 46 doc. 204. Thanks largely to the clear thinking and guidance of the rapporteur, M. Meyriat, and the obvious willingness on the part of every member to sacrifice individual preferences, the meetings of the group were short and to the point. In order to arrive at a workable compromise, the group made a number of clear recommendations, of which the most important were as follows :

- to exclude from the future ISO recommendation table the column relating to Old Church Slavonic and the relatively rare characters 45-54 (not detailed in doc. 204), on the grounds that these were incomplete and that there was little hope of a reasonably early agreement on them ;

- to adopt h (alone) as the recognized international transliteration for Cyrillic X, with a footnote giving ch and kh as optional on condition that adequate cross-references are provided ;

- to adopt g for Г in all the languages, using ġ for Ukrainian and White Russian, referred to by a hooked G ;

- to retain i for И in all the languages except Ukrainian, for which y should be used.

As a separate recommendation, the group also proposed the inclusion of a note giving optional (typable) signs for use in typescripts or documents reproduced from typescript, but it was emphasized that this was purely tentative and could readily be withdrawn in face of objections by member bodies willing to accept the other specific modifications.

The Committee, in final session, whilst recognizing that one or more of these recommendations might be distasteful to some countries, nevertheless accepted them, and instructed the Secretariat to include them in a second draft ISO recommendation to be circulated as soon as possible to all ISO member bodies for approval. If no serious objections were raised, the Secretariat would submit the draft recommendations to the ISO Council for acceptance as an ISO recommendation.

6. *Programme of work for the main committee*

Despite its already heavy commitments in connection with the foregoing items and the work in hand on format and layout of index cards, slips and other data forms, the Committee decided to accept for its future programme of work the following new subjects :

Layout of articles in periodicals

Although the working party on 'layout of periodicals', which had been requested to deal with this subject, had not had time to do so, the general view was that document 191 required re-editing and careful comparison with related recommendations, especially those on 'layout of periodicals' and 'bibliographical references', before it could be circulated as a draft proposal to all ISO/TC 46 members.

Abstracts and synopses

At the opening session, the main Committee appointed an *ad hoc* working group consisting of four members to study the possibility of drawing up a single draft proposal for abstracts and synopses, based on the preliminary ISO/TC 46 draft and the Unesco *Guide for the preparation and publication of synopses*, in which the term 'synopsis' is applied to an author's summary published simultaneously with the paper itself. The Committee, in accepting the three points of the group's report, took special note of the third point, strongly emphasizing the desirability of having the work on this item completed by 1954, and urged that close attention should be given to related recommendations (notably that on 'bibliographical references') in the preparation of the new draft.

The U.K. delegate, whilst accepting the report from the working group, drew attention to the fact that the ISO/TC 46 draft, in fact, took little account of many of the recommendations of the Unesco *Guide*, itself the outcome of two or three years' discussion by experts in fulfilment of recommendations from the (British) Royal Society's Scientific Information Conference in 1948 and the Unesco International Conference on Science Abstracting in 1949. He, therefore, asked what the exact intention was, and whether there was not, in fact, implied a duplication of much of this earlier work. In reply, it was pointed out that the Unesco *Guide* dealt with synopses (author's abstracts) in the scientific field only, and what was wanted was a much more comprehensive guide dealing also with other types of abstracts and extending to wider fields, including the social sciences. The U.K. delegate doubted whether it was possible to standardize all aspects, and suggested that ISO's task was primarily that of standardizing tangible concepts rather than attempting to establish general rules or guides, which could be (and had been) done by Unesco. There was general agreement with this, and the rapporteur of the working group again emphasized that the Unesco *Guide* and any other available sources would be carefully considered in preparing the new draft.

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Transliteration of Hebrew, Arabic and Greek characters

On the understanding that a draft proposal for Hebrew had already been prepared in Israel, and that preliminary studies and drafting of proposals for Arabic and Greek were nearing completion in France, the Committee accepted the following proposal :

The Co-ordinating Committee on Documentation in the Social Sciences (C.C.D.S.S) requests ISO/TC 46 to put on its programme of work the preparation of international standards for the transliteration of the Greek, Arabic and Hebrew alphabets.

7. Next meeting

Reporting that the F.I.D. was to hold its 1953 meeting in Vienna in June or July, the Secretary added that he felt this was too soon for a plenary meeting of ISO/TC 46, and suggested that October or November would be the earliest feasible date. Several members stressed the convenience of having ISO/TC 46 meetings immediately before or after those of the F.I.D. (and I.F.L.A.), and the Committee expressed appreciation of the cordial invitation extended by Dr. Lang on behalf of the Austrian standardizing body (Ö.N.A.). There was general agreement, however, that only certain working parties, and possibly the Documentary Reproduction Sub-committee (SC1) should meet in Vienna in June, so that they could prepare documents for a plenary meeting to be held some time in 1954, the place and exact date of which would be decided later.

DOCUMENTARY REPRODUCTION SUB-COMMITTEE (ISO/TC 46/SC 1)

The report of the Sub-committee's work included the results of the meeting in Paris in April. For the Sub-committee Secretariat, M. Frontard strongly urged the desirability of having the two draft proposals on microcopies (SC1 doc. 29 and 31) approved as draft ISO recommendations by the main Committee ; it was agreed that this might be possible in final session, after the Sub-committee had met during the second day to clear up outstanding difficulties.¹

Photographic reproduction of documents on paper ; sizes

The Committee approved the draft proposal ISO/TC 46 doc. 187 with the two following minor modifications :

After 'current tolerances' add '(for trimmed documents)', and for the word 'normal' in the last sentence (boxed), substitute the words 'the following'.

Terminology of microcopies and their bases (SC 1—doc. 29)

The Committee took special note of the first two recommendations

¹ The sole U.K. delegate, owing to commitments with two of the *ad hoc* working groups, was unable to attend this meeting and was, in any case, not a specialist on photographic subjects.

The report and recommendations were, however, distributed in time for the last session of the full Committee.

reflecting a number of still unresolved difficulties on terminology to be settled by consultation between the Secretariat (AFNOR) and the British and American experts, and approved the procedure laid down in the third recommendation which should very shortly result in the circulation of doc. 29 to ISO/TC 46 members.

Microcopies. Recommended bases : sizes (SC 1—doc. 31)

The Committee approved the slight modifications proposed by the Sub-committee, and authorized the TC 46 Secretariat to circulate the document 31 to all members of ISO/TC 46 as a draft proposal for comment and criticism.

Programme of work. Unesco grant. Microfilm reader

As already stated in section 1, the Committee agreed in principle to the Sub-committee's proposal for allocation of the Unesco grant, and in particular its decision to use part of this for a meeting of experts on microfilm readers (section 1). Its intention to press on with its work in connection with the standardization of 35 mm. and 16 mm. microfilms was noted with approval.

THE NATIONAL CENTRAL LIBRARY

Extracts from the Thirty-sixth Annual Report of the National Central Library for the year ending 29th February, 1952.¹

THE total issues of books from or through the Library show that its services to all categories of libraries have not only been maintained in the face of continual difficulties and temporary dislocations owing to rebuilding, but have substantially increased. Compared with the year 1950-1 the total applications show an increase of 8,643, or 9.3 per cent. ; those successfully dealt with, an increase of 8,610, or a rise in percentage from 65.3 to 69.37. . . . Issues to university libraries show an increase of 26.09 per cent. There is also a considerable rise in those to outlier libraries and to the libraries of Government departments, industrial and research organizations, and educational and cultural bodies. . . .

The close contact, recorded in previous years, with other organizations whose work and interests concern the Library and inter-library co-operation has continued. Several parties of students of librarianship and a large number of visiting librarians from overseas have been received in the course of the year. . . .

The rebuilding operations, begun in October, 1950, were continued in spite of various delaying factors. It proved possible, however, to bring the west wing of the Library into occupation at the expiry of the Library's lease of No. 8 Woburn Square in June, 1951, when, for the first time since September, 1939, the whole staff were again housed under one roof. When, in July, 1951, the dismantling of the old floors of the east wing was taken in hand, it was found that the existing steel beams were inadequate to carry the upper structure and the new fire-proof floors. To reinforce the beams, steel stanchions had immediately to be provided, running up through three floors of the wing, and supported on concrete piles driven below the floor of the basement to a depth of 25 ft. This complicated—and extremely unpleasant—process lengthened rebuilding operations by several months and much increased the cost. At the end of the year, it was possible for the Trustees to look forward to a definite completion date and to arrange for a ceremony to mark the opening of the restored building in the summer of 1952. (The formal opening of the restored building took place in June, 1952. The National Central Library, of course, had never been actually shut.)

Finance

The Committee report with gratitude that the Lords Commissioners of Her Majesty's Treasury continued to give increased recognition to the work and national importance of the Library by increasing their grant-in-aid, which had been £25,000 in the previous year, to £27,250 for 1951-2. This increase included a sum of £1,000 to compensate for the

¹ Copies of the complete report can be obtained on application to the National Central Library, Malet Place, London, W.C.1.

final stage in the discontinuance of the generous contributions which for so many years the Carnegie United Kingdom Trust made to the Library. . . .

The Committee note with great satisfaction that the contributions from libraries of all types, adult class organizations, and individual contributors, to the Library's finances amount this year to a sum of £5,210 18s. 2d., an increase of 40 per cent. over the corresponding year before the trustees' appeal was issued. . . .

Bureau of American Bibliography

The Bureau of American Bibliography, established in 1938 by a generous grant from the Rockefeller Foundation, continues to serve as an invaluable source of information on American books and periodicals. The Library of Congress Catalogue, in addition to its use by the Library's own staff, has proved of great assistance to other libraries.

Outlier libraries

The very important group of 'outlier libraries', comprising the leading libraries devoted to books on special subjects, and a number of research institutions, which have undertaken to lend books for which specific requests are made through the agency of the National Central Library, now numbers 223 and comprises 194 special libraries and 29 London borough libraries. The following libraries have been added to the list during the year :

The Italian Institute of Culture.

The Library Association (who had assisted in this way since 1948).

The Royal Geographical Society.

The Silk and Rayon Users Association.

The total number of volumes lent by outlier libraries during the year was 24,234 compared with 20,271 in the previous year. . . . In addition to the assistance given by outlier libraries, other special libraries lent a total of 2,489 books to meet special needs, at the request of the National Central Library, the Scottish Central Library, or the Irish Central Library. . . .

University libraries

The total number of books issued by the Library or through its agency to university libraries (excluding those issued to adult class departments) was 16,997, an increase of 3,518, or 26.09 per cent. on the figure for the previous year.

While the university libraries benefit by these loans under the national system, they also take their full share in lending books to other libraries, 38,962 having been lent in the year 1951-2. The calls made on universities for the more specialized books and periodicals continue to increase, and gratitude is due to all the librarians who have so readily responded to them.

NATIONAL CENTRAL LIBRARY

International loans

The Committee are glad to report that the number of loans made to foreign libraries (1,589) has remained at the same high level as in the preceding year, when such a notable increase was reported, and that a considerable increase in loans made by foreign libraries to British libraries has taken place this year (885 as against 584 in 1950-1). This is a healthy sign, and it is to be hoped that the gap between books borrowed and books lent by foreign libraries will become still further narrowed in future years. . . .

German libraries continue to borrow and to lend the greatest number of books, but there has been a very notable rise in the number of books lent by French libraries, the previous year's figure having more than doubled. Another point of interest is that the number of books lent to certain countries in Eastern Europe is relatively high and has in most cases increased. There has been little variation in the number of different foreign countries lending or borrowing.

Union catalogues

The *National Union Catalogue* continued to make progress with a slightly smaller staff during the current year. 97,050 slips were edited and inserted (as compared with 142,838 entries in 1950-1), and 26,777 new entries were received (5,464 in the previous year), so that the total arrears received and awaiting incorporation are approximately 155,353, as against 225,626 a year ago. The year's work has involved a greater amount of preliminary sorting than in the previous year, for which the results are not immediately apparent.

The same staff is also responsible for the maintenance of the *Outlier Union Catalogue*, which now has no arrears of entries supplied but awaiting incorporation. This catalogue has been increased by 7,275 accessions cards from contributing libraries and by 27,218 cards of positive (11,957) and negative (15,261) results of searches for books and periodicals. The total number of cards added to the *Outlier Union Catalogue* was thus 34,493, a reduction of 6,593 as compared with the previous year. The increase in the number of applications satisfied by the Library is partly due to this recently introduced practice of systematically recording the results of searches for books and periodicals.

It is a matter for regret that no further funds could be made available by H.M. Treasury this year for work on union cataloguing and the development of the outlier library system. . . .

Union catalogue of Russian books and periodicals

Work on the Union Catalogue of printed material in the Russian language in the libraries of the United Kingdom has been somewhat retarded by loss of staff; less basic material has consequently been added to the catalogue; on the other hand, an increasing proportion of time has been spent on incorporating accessions sent in by libraries already catalogued.

Holdings at the following libraries have been catalogued during

1951-2 : the London School of Hygiene and Tropical Medicine ; the University of Nottingham ; Nottingham Public Libraries ; the British Medical Association ; the Department of Scientific and Industrial Research (main library) ; and the Medical Library, Institute of Neurology at the National Hospital.

Up to the end of February, 1952, the total holdings catalogued were : volumes of books 29,786 ; periodicals (titles) 1,967 ; periodicals (issues) 54,465 ; newspapers 93.

Work is still in progress on the material held by the British Library of Political and Economic Science. The Russian collection there is gradually being recatalogued and the Librarian has kindly arranged to pass on the Library's working cards to the Russian Union Catalogue ; cards are made out from these records for incorporation in the catalogue.

There has been an increase of over 20 per cent. in the number of applications received during the year for material in the Russian language ; the figure for requests dealt with during 1951-2 stands at 1,526. It has been possible this year to provide locations for a much higher proportion of the applications received ; out of the total number of requests for Russian material, the percentage for which the Russian Union Catalogue had locations rose from nearly 46 per cent. in 1950-1 to nearly 60 per cent. in 1951-2. It is of interest to note that these requests are very largely for scientific periodicals.

Union catalogue of German war-time books and periodicals

The grant from the Foreign Office for the Union Catalogue of German War-time Books and Periodicals ceased with the year 1950-1, but it has fortunately proved possible to retain the help of one skilled assistant to complete the basic work of the catalogue, to enter holdings submitted by co-operating libraries, and to edit the catalogue in its final form. The sheaf catalogue for books has been completed for A-K and contains about 4,200 entry slips. Inquiries for German material are received in increasing numbers and bibliographical information is frequently sought and given.

British National Book Centre

The activities of the British National Book Centre have again considerably increased, in the number and range of libraries benefiting, in the amount of material made available, and the exchanges arranged. Owing, however, to the impossibility of increasing its staff, the centre has had to concentrate on the more essential services and an attempt to reduce the amount of materials at present held in store in the Library.

Sixty-nine new subscriptions were taken out for book lists and fifty-two for periodicals. The average number of titles in book lists issued rose from 1,500 in 1950-1 to over 2,100, and the number of periodical titles offered in each list was more than doubled. Thirteen book lists and thirteen periodical lists were circulated, containing respectively 28,525 and 7,160 offers ; and in this way 27,601 books and 74,757 periodical volumes and parts were re-allocated. Ten lists of residual material were

NATIONAL CENTRAL LIBRARY

forwarded to UNESCO and the greater part was taken up by foreign libraries.

The collection of about 10,000 parts of League of Nations publications sent to the Library in 1948 was at last sorted with assistance from the staff of Westminster City Library. As a result, substantial sets were made available for that library, for the West Indies, and for the Board of Trade Library. . . .

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ASLIB PROCEEDINGS

Volume 5

May 1953

Number 2

INTRODUCTION

IN this issue of *Aslib Proceedings* we are glad to be able to include papers from two of the series of winter meetings held in London by Aslib, papers given at the Annual General Meetings of the Northern and Scottish Branches, and three contributions to MEMBERS' FORUM.

The first of the 1953 London Winter Meetings, on 21st January, was in the form of a symposium on the acquisition of second-hand periodicals, held under the Chairmanship of Mr. R. H. Hill of the National Central Library. Speakers were Mr. B. C. Vickery, who outlined the problems associated with the building-up of a stock of periodicals, especially in a new library; Mr. H. Marley, of Messrs. Wm. Dawson & Sons, Ltd., who spoke from the point of view of the commercial book-seller as a source of supply for the librarian; Mr. A. Allardyce, who then described the role of the British National Book Centre as an alternative source of supply; and Mr. Kenneth Shaw, who rounded off the symposium by an attempt to list some of the factors that influence acquisition policies when periodicals are concerned. Papers by Mr. Vickery, Mr. Allardyce and Mr. Shaw are printed in full, followed by a summary of the ensuing discussion.

The February meeting broke new ground by staging a 'Copyright Moot'. A fictitious case involving an alleged infringement of the Copyright Act was presented in dramatic form. Sir Arnold Plant was in the Chair and various members of Aslib took the parts of Dr. Verrey Keen, the Research Engineer whose paper was the cause of all the trouble, Sir Manuel Makeham-Best, the Managing Director who claimed the copyright as the employer of Dr. Keen, Mr. Galley, editor of the *Chronometer Saturn* in which a reported version of Dr. Keen's paper was published, and Mr. I. Helpham, the Information Officer who duplicated copies of the printed version of the paper for members of his Research Association and thereby, according to Mr. Galley, infringed the copyright of the *Chronometer Saturn*. Comments on the cases as presented were made by a member of the legal profession. An account of the Moot is printed on pp. 87-100, together with some of the points raised subsequently by members of the audience.

The Annual General Meeting of the Northern Branch of Aslib was held in Manchester on 30th January, 1953. Mr. G. H. Davison presented a paper on patents, with particular reference to those facts which are of interest to industrial librarians and information officers. His paper was illustrated by a film-strip showing examples of curious ideas for which patent protection had been obtained in the past, ranging from a jet-

propelled aeroplane (patented in 1867) to reversible trousers! Unfortunately, it is not possible to reproduce all these illustrations, but two examples are given in Appendix 5 of his paper.

The Scottish Branch of Aslib held its Annual General Meeting in Glasgow on 27th February. One of the papers read at the meeting was by Mr. Eric N. Simons, who discussed the writing of English for abstracts and reports and pilloried many of the commoner faults. We are glad to be able to include it in this issue.

MEMBERS' FORUM this time has three practical contributions. Miss Margaret Gauntlett gives us the experience of the Research Library at Kodak, Ltd., in the use of continuous-form stationery for library loan records. Mr. C. E. C. Hewetson, recently Consultant at Aslib, combines with Mrs. Murch, Librarian of the Chemical Research Laboratory at Teddington, to describe the system of circulating periodicals which for three years has been used with success at the Laboratory. Lastly, but by no means least, Dr. William J. Wiswesser, Director of Chemical Research at Willson Products, Inc., Reading, Pa., U.S.A., has very kindly outlined his system of 'line formula' chemical notation. In 1951 ten systems of chemical notation were offered for consideration to the Commission on Coding of the International Union of Pure and Applied Chemistry. Dr. Wiswesser's was one of the four selected for further testing, the others being those notations devised respectively by G. M. Dyson, W. Gruber and J. A. Silk. Readers who are interested in comparing two different approaches to the problem may like to be reminded that at one of the last meetings of the British Society for International Bibliography Dr. Dyson gave a short paper on his system which was printed in *Aslib Proceedings*, vol. 1, no. 1.

E. M. R. DITMAS,
Editor.

PERIODICAL SETS : WHAT SHOULD YOU BUY ?

By B. C. VICKERY, M.A.

Librarian, Imperial Chemical Industries, Ltd., Batterwick Research Laboratories

London, 21st January, 1953

WHEN I consider the *World list of scientific periodicals*, or the array of slips which we hope will one day be published as the *British union catalogue of periodicals*, and then turn to look at the few journals on my library shelves, I feel rather as Newton did : like a child, playing with a few pebbles on the sea-shore, while the vast ocean of truth lies all undiscovered before me.

It is well to emphasize here, at the start of this symposium, how incomplete are the holdings of the average library, and how essential it is to have an adequate set of guides to the ocean of literature in other libraries. The most valuable guides are themselves periodicals—abstracting and indexing journals—and the wise librarian will study all those which cover his subject field (1), and buy a long run of each selected title.

How long should these runs be ? There is no easy answer to this question. Two problems to be considered are how far back into the literature we need to search, and how adequately the abstract journals will guide us to the literature. The second is a question of subject indexing, and needs detailed research to answer. A few words may be said about the first problem.

Five years ago, Dr. Urquhart presented the results of a sample survey of publications borrowed from the Science Library. About a quarter of the items loaned were less than a year old, a half were not more than six years old, and 90 per cent. were under twenty years old (2). A survey of external borrowings by my own library during 1952 gave similar results, though the 90 per cent. figure stands further back in time—at twenty-seven years old (*see* Fig. 1).

It might be argued that to have guides stretching that far back would be good enough : but it would be wiser to try to cover all potential loans with abstracting and indexing journals going as far back as possible. Particularly in scholarly research, the value and importance of a paper is not measured solely by its modernity : many nineteenth-century papers in physics, for example, are still a rich source of ideas.

When we come to periodicals containing original work, however, their sheer bulk enforces selection both of the titles to stock and of the length of run. For twenty-five years there has been used a method for selecting titles, introduced by Gross and Gross (3). One or more 'standard' journals in a subject field has been chosen, and all the periodicals cited in a year's issues have been ranked in order of frequency of citation. This ranking is regarded as the order of importance of these periodicals in the subject (4).

TABLE 1: LOAN FIGURES FOR A PERIODICAL

<i>Year of Publication</i>	1951	1950	1949	1948	1947	1946	1945
<i>Times borrowed</i>	98	47	26	14	19	16	15
<i>Cumulative</i>	467	369	322	296	282	263	247

1944	1943	1942	1941	1940	1939	1938	1937	1936	1935
16	15	17	16	13	15	9	15	17	11
232	216	201	184	168	153	138	129	114	97

1934	1933	1932	1931	1930	1929	1928	1927	1926	1925
8	7	8	7	6	3	4	6	9	3
86	78	71	63	56	50	47	43	37	28

1924	1923	1922	1921	1920	1919	1918	1917	1916	1915
9	4	1	1	3	2	2	1	1	1
25	16	12	11	10	7	5	3	2	1

In recent years two medical librarians have provided evidence that the rankings so obtained do not correspond to the rankings of users—whether these be derived from experts' lists of journals or from statistics of library use (5). This suggests that the Gross and Gross method should be modified—counts of journal borrowings are a more reliable guide to ranking than are citations in standard journals. This is even more certain when we are providing periodicals, not for a broad and well-defined subject field (e.g., organic chemistry), but for a research station with diverse interests. In a library newly started, it will be necessary to use all three aids to selection: the advice of subject specialists, study of the citations in standard journals (including abstracting journals), and, as data on external borrowings mount up, study of these as well.

The loan figures will also be a guide to the length of run which should be purchased. A particular periodical volume may be used only once or twice in the life of a library, so that it is not worth buying; or it may be used more frequently. To have some test to decide when purchase is justified would be useful, and loan figures do suggest such a test.

Let us suppose that the figures shown by the solid line in Fig. 1 show a year's borrowings of a single periodical. The 1951 volume was borrowed ninety-eight times during 1952, the 1950 volume forty-seven times, the 1949 volume twenty-six times, and so on. If we reasonably assume that the falling off in demand, as time passes, will follow the same curve for each volume, we can expect that the 1951 volume will be borrowed forty-seven times in 1953, twenty-six times in 1954, and so on. The cumulative figures of Table 1 thus represent an estimate of the total number of times the borrowing of each volume may be expected during its whole useful life. If the cost of buying, accessing and housing a volume is x times the cost of borrowing, then it is economic to buy a volume if its cumulative figure is greater than x (6).

It may be stated at once that there are a number of factors which complicate this simple analysis. In the first place, the loan figures of a

VICKERY : PERIODICAL SETS

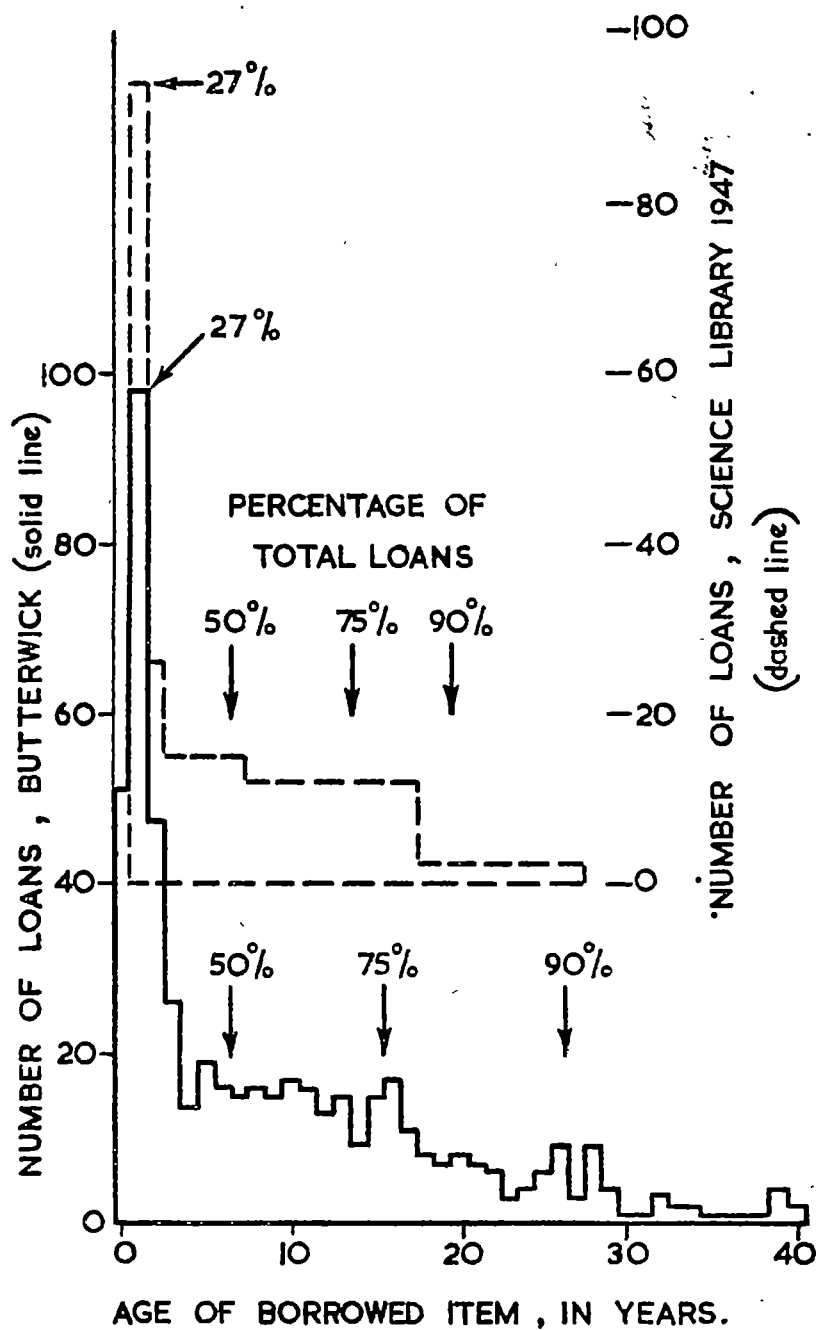


Fig. 1. External borrowing of periodicals by I.C.I., Ltd., Butterwick Research Laboratories Library.

TABLE 2 : LOAN FIGURES FOR LIEBIG'S *ANNALEN*

Year of Publication		1942	1941	1940	1939	1938	1937	1936	}
Times borrowed		3	2	0	1	0	6	2	
1935	1934	1933	1932	1931	1930	1929	1928	1927	1926
1	1	6	1	3	3	1	7	4	6
1925	1924	1923	1922	1921	1920	1919	1918	1917	1916
2	3	1	0	0	2	0	0	1	0
1915	1914	1913	1912	1911	1910	1909	1908	1907	1906
2	0	1	3	0	0	5	0	1	1
1905	1904	1903	1902	1901	1900	1899	1898	1897	1896
1	1	1	1	0	5	2	1	3	0
1895	1894	1893	1892	1891-1888	1887	1886	1885		
0	1	1	2	0	1	1	4		

periodical do not always have the logarithmic form shown in Fig. 1. In organic chemistry, for example, useful papers appear to be scattered at random over the years, as Table 2 shows, and no smooth falling off in demand can be assumed.

In the second place, the analysis neglects some imponderable but important factors, such as the economic value of having a volume readily accessible when it is wanted, even if reference is rarely made to it, and the availability of the volume in neighbouring libraries. An examination of the journal usage figures of an established library (7) showed that only a small proportion of its holdings could be justified on a narrow economic basis. The analysis is a guide only to the *minimum* holdings needed by a library. Mr. Shaw will mention a number of other factors which will affect our decision whether to purchase or not.

Having tried, by the means outlined above, to arrive at an objective estimate of what periodical sets he needs, the librarian now has to consider sources of supply. It goes without saying that the publishers of journals sometimes have sets available which they advertise in current issues. War-time limitations on publication and enemy activities have often depleted these stocks.

The war-time issues of many German and other Continental periodicals were microfilmed by the Aslib Microfilm Service, and copies of these films can still be obtained (8). J. W. Edwards of Ann Arbor, Michigan, also reproduced copies of such journals by the photo-offset process. Sets of some standard scientific periodicals are now being reprinted, e.g. by the Johnson Reprint Corporation of New York and by our own William Dawson & Sons (9). An increasing variety of journal sets are now available on microcards (10).

All these sources, though valuable, cover only a limited number of the sets we are likely to need, and for completing our holdings we must

VICKERY : PERIODICAL SETS

turn to two further sources : second-hand dealers and other libraries. The two speakers who follow will deal with aspects of these in more detail, and I propose only to mention them briefly.

There are many thousands of dealers in second-hand books, but relatively very few of them deal regularly and widely in periodicals. It is worth while for librarians to consult British and international directories, and to make contact with dealers listed therein (11).

The commercial interchange of whole periodical sets which such dealers effect is complemented by the exchange of parts and short runs between libraries. Internationally, this has been carried out through the Unesco Clearing House for Publications, and in America by the United States Book Exchange. In this country, the Medical Section of the Library Association has, since 1947, been running a simple exchange system (12), and the British National Book Centre is doing the same job on a wider scale. It has often been argued that it is never advisable to purchase from dealers runs which are incomplete but, with the possibilities of obtaining odd parts which inter-library exchange is opening up, this advice does not seem sound.

Building up a library is never an automatic business. The assets needed for success in the hunt for periodical sets are the same as those needed in general book selection and acquisition : a thorough understanding of users' needs, contact with a wide variety of sources, and pertinacity in scanning lists of items offered for sale or exchange. It must also be confessed that a generous treasury is needed, for prices are high. During the first four formative years of my library, which serves a research station with a variety of departments, 38 per cent. of the publications budget was spent on books, 18 per cent. on current periodicals, and 44 per cent. on sets of periodicals. These figures serve to illustrate the importance of such sets to the modern research library.

REFERENCES

- (1) Lists of such journals include the *Index bibliographicus* (2 vols., Paris, 1951-2), the Royal Society's *List of periodicals and bulletins containing abstracts published in Great Britain* (London, 2nd edition 1950), and Winchel's *Guide to reference books* (Chicago, 7th edition 1951). Older guides are also listed by Besterman, *World bibliography of bibliographies* (3 vols., London, 2nd edition 1947-9, new edition in preparation).
- (2) D. J. URQUHART, *J. Documentation*, vol. 3, pp. 222-49, 1948. The time distribution of borrowings is also discussed by C. F. GOSNELL, *Coll. and Res. Lib.*, vol. 2, pp. 216-20, 1941, and vol. 5, pp. 115-25, 1944.
- (3) P. L. K. and E. M. GROSS, *Science*, vol. 66, p. 385, 1927.
- (4) Those interested in mathematical refinements of this method may consult C. F. DALZIEL, *Lib. Qrly.*, vol. 7, pp. 354-72, 1937.
- (5) E. BRODMAN and W. D. POSTELL, *Bull. Med. Lib. Ass.*, vol. 32, p. 479, 1944, and vol. 34, p. 107, 1946.
- (6) B. C. VICKERY, *Ind. Chemist*, vol. 26, pp. 70-2, 1950.
- (7) C. C. BARNARD published journal usage figures for the London School of Hygiene library over the period 1931-5, in *Lib. Ass. Record*, series 4, vol. 5, p. 549, 1938.

(8) A list of the titles filmed was given by LUCIA MOHOLY, *J. Documentation*, vol. 2, pp. 162-73, 1946.

(9) Johnson reprints include *Annalen*, *J.A.C.S.*, *J.C.S.*, *J. Org. Chem.*, *J. Phys. Chem.*, *Chem. Rev.*, *Helv. Chim. Acta*, and *Rec. Trav. Chim.*, while Dawson reprints include *Biochem. J.*, *J. Physiol.*, *Proc. Phys. Soc.*, *Rep. Prog. Phys.*, *Proc. London Math. Soc.*, *J. Soc. Glass Tech.*, and *Phil. Mag.*

(10) See the *Microcard Bulletin*, issued by the Microcard Foundation, Middletown, Conn., U.S.A.

(11) See the *Directory of dealers in second-hand and antiquarian books in the British Isles* (London, Sheppard Press). Foreign dealers should not be neglected: many are listed in the *International directory of antiquarian booksellers*, obtainable from P. H. Muir, Takeley, Bishop's Stortford, Herts.

(12) F. N. L. POYNTER, *Lib. Ass. Record*, vol. 52, pp. 41-3, 1950.

THE ROLE OF THE BRITISH NATIONAL BOOK CENTRE

BY A. ALLARDYCE, A.L.A.

Superintendent, British National Book Centre

London, 21st January, 1953

THE two situations which make the work of the British National Book Centre necessary are only too well known to most of you, and have been described in their setting by Mr. Vickery. The first is that of congested shelf space. All libraries outgrow their accommodation, good libraries more quickly than the others, and librarians are hard pressed to dispose of their surplus journals in a manner which will bring them some return and at the same time square with their professional reluctance to waste useful material. The second situation which makes our work fruitful is that faced by even the best librarians—gaps in runs of journals, some gaps serious, some small, but all at least irritating.

The existence of these two situations has given rise in many learned and research libraries to the practice of circulating among libraries with similar interests lists of duplicates and wants, in the hope of killing with one stone the two birds of filling gaps and making space. Now, circulating such lists is a burdensome task and often the results are disappointing; in any case there are obvious limits to this sort of exploring for even the largest library, and in many of the smaller special libraries these limits are narrow indeed.

This is where the British National Book Centre comes in. We act as a sort of broker (without commission) between the library offering duplicates and that wanting sets, odd volumes or parts. Needless to say, most libraries find themselves in the two roles at one and the same time. Let me emphasize that no cash changes hands in these transactions. The offers must be free gifts and we cannot put libraries or other organizations into touch with prospective sellers or buyers. Now, how do we do our work? Mr. Overton (a former Superintendent of B.N.B.C.) in an article in *The Journal of Documentation*, vol. 8, no. 3 (September, 1952), has not only given a historical note on our organization but has described in considerable detail just how we operate, and some of this detail is given in a note* which has been distributed at this meeting. I will therefore make my remarks brief, but certain changes of emphasis since that article was written will emerge.

The commencement of the process is for the library offering material to list it for us on our special cards which are supplied free of charge. These cards are lodged with us as they are completed, and once a month we edit and arrange them. From this copy we produce and distribute a periodical list of which you all have a sample.* If you look at it you will

* The Superintendent, B.N.B.C., National Central Library, Malet Place, London, W.C.1, will be pleased to send a copy to anyone interested.

observe that the first page begins with various admonitory notes after which follows a list of WANTS. These are usually items for which librarians have made thorough search in our lists and elsewhere in vain. We try to restrict the length of this list, as otherwise it might look too formidable for anyone to trouble to check it. Each WANT is checked for six months against all material offered for our lists and then, if not satisfied or only partly satisfied, returned to the sending library for reconsideration. After the WANTS follow the titles of the serials offered, in alphabetical order, each item specifying the volume and parts available. All of one item may not, of course, come from one library, but may be an amalgam of parts offered by several libraries. The production cost of this list is (apart from the staff time involved) about 15s. for twelve issues, and that is fixed as the subscription for libraries which wish to receive it regularly. It is despatched to over 200 libraries each month, and of these over a half are special libraries, a quarter university libraries and a quarter public libraries. A special light air mail edition of this list is sent to libraries in the Commonwealth, with an extra charge for air mail transmission.

Libraries receiving this list have one month in which to let us know what they want from it, after which allocation takes place. This is a very complicated process, involving the splitting up of titles among many different libraries, and often allocating to one library parts of one title coming from many libraries. I may say it sometimes involves allotting to a library whose left hand knoweth not what its right hand doeth material it itself has offered ! You may imagine what financial complications attend refund of postage in such cases. Of course, there is a good deal of competition for such things as runs of *J. Am. Chem. Soc.* and *Science Abstracts* and we have to decide who is to have what. The main principle guiding our decisions is that libraries which have given most get most, but we also consider such factors as subject specialization schemes and pleas for odd numbers to complete existing sets.

You may be wondering if this simple scheme does achieve worth-while results. Well, you may receive some idea of the *volume* of redistribution taking place in the manner described if I tell you that in the ten months ending December, 1952, we managed to find good homes for some 8,000 periodical volumes and 24,000 parts, a total of 32,000, and that this was 9,000 pieces more than in the corresponding period of 1951. Let me make it clear that this was entirely through the lists and by no means represents all the periodical work done by the Book Centre, as you will see shortly.

So much for quantity. You may perhaps wonder, if a scrutiny of the list you have gives you no indication, whether anything outstanding ever comes through the Centre. To satisfy my own curiosity on this point I asked two well-known special librarians this question and in reply they each gave me a list of material they especially valued and which in some cases they would have found elsewhere only with some difficulty or at great cost. The items quoted include :

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Berichte der Deutschen Chemischen Gesellschaft—24 volumes covering the period 1898–1908

Journal of the Society of Chemical Industry—45 volumes covering 1882–1930 (v. 1–42 complete)

Journal of the American Chemical Society—45 volumes covering the period 1911–1936

Journal of the Chemical Society—42 volumes covering the period 1898–1927

Chemical Abstracts, second decennial index 1917–1926 complete

Chemical Abstracts, third decennial index 1927–1936, subjects A–D

Metallurgical Abstracts, vol. 1 and 2 complete.

There may be many more valuable items than these, but they had apparently been prized by the acquiring librarians.

One aspect of the Book Centre upon which I have not so far touched is our possession of a large stock of periodicals, between 200,000 and 300,000 parts and volumes. I have left this deliberately because, although some special librarians have a more vivid impression of this feature of our service than of any other, with our present small staff this stock plays a very minor part in our activity. Our staff is in fact conditioned to working with lists and it has never been part of National Central Library policy to undertake the storing of periodicals, or to provide the staff to handle them. The Book Centre scheme was devised on a very small grant to enable libraries to receive the greatest possible benefit from co-operation in the field of interchange with the small central staff available, and under the circumstances so far prevailing this policy has, in my opinion, been entirely justified.

The fact remains, however, that we have a stock, largely inherited from a war-time project called the Inter-Allied Book Centre, but also augmented since by gifts from private individuals and organizations, of whom there are many, which would like to help libraries without themselves desiring any return for their generosity. Up to the beginning of 1952 it was possible to pursue a policy of taking selected offers into store, but since then we have had to be much more discriminating—and usually completely self-denying—as a slightly reduced staff has had to cope with a great increase in list work, thus leaving no staff time for handling periodicals themselves. Librarians who have visited our store will testify to the amount of unsorted, and to that extent useless, material lying there. They would also testify to the usefulness of our stock in providing the basic materials for a new special library or for one extending the range of its holdings. We ourselves have used it with some success to supply foreign libraries (usually through Unesco) with material not in great demand in this country, with the expectation (usually realized) of having in return offers of duplicate foreign material. Owing to pressure of other work this side of our activities has been dropped for the last year, but we are still notifying in our lists, and circulating on demand, offers from foreign libraries resulting from gifts made from our store through Unesco.

Before returning for a moment to the role of our periodical stock as a sort of universal provider for new special libraries and those changing their policy, I should like to state clearly that my remarks, while deriving from my experience in the Book Centre, are entirely my own, and are neither a statement of N.C.L. policy nor a criticism of it, nor are they made by me as a servant of the National Central Library.

One of the features of post-war politics has been the unanimous insistence of Prime Ministers and Chancellors of the Exchequer of both parties, and of course of leaders in *The Times*, *The Observer*, *The Manchester Guardian*, *The Economist* and all the lesser fry, that this country must export to live and must increase its exports if even present living standards are to be maintained. It follows that we must accommodate our production plans to changes in the export market. The implication of this will be quite plain to industrial librarians here. Change of production must be preceded by change of research policy. Change of research policy makes new demands upon the library, which must set about acquiring new basic material, and extending or re-shaping the margins of its coverage. Where is all this material to come from? The second-hand dealer provides one of the answers, and in the past the Book Centre has provided another, to the tune of tens of thousands of periodical volumes and parts. One library, for example, that of a new firm making a product basic to the export drive and of high priority in the rearmament programme, acquired over two-thirds of its extensive periodical holdings through the Book Centre, and of this a great part came from stock.

This has been possible only because the very large stock received from the Inter-Allied Book Centre was already arranged and indexed, and therefore accessible, and up to a year ago staff was available to sort material coming into the Centre. This stock is now, however, not only frozen for lack of staff, but also, for the same reason, a wasting asset. Partial exhaustion of the stock of common basic periodicals and lack of staff time to exploit those that remain are illustrated by the facts that during the ten months *before* February, 1952, this stock provided about 23,000 volumes and parts for British and Commonwealth libraries alone, whereas in the *following* ten months only 6,000 volumes and parts have been sent out. None has been added during this period.

As I say, this stock is a wasting asset. Whence could it be replenished? One source I have already touched upon, when mentioning that we have constantly to refuse substantial donations of valuable periodical material. The other source I have in mind is so far untapped—I refer to those periodicals offered in our lists and not taken up, and over whose subsequent disposal we have no control. It comprises 40–50 per cent. of the titles offered, and on the whole is much the same material as that allocated. Indeed, it seems to me that what is now finding no useful outlet through B.N.B.C. is just the sort of item that new industrial and technical libraries will have great difficulty in obtaining in five or six years' time, or even sooner. This material is running away either to pulping, to the foreign market or to foreign libraries through the great gap in B.N.B.C. service which I should like to see plugged.

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I think some importance should be attached to building up somewhere extensive sets of the basic material now in current circulation which is certain to be in demand in a few years' time, when lack of it could seriously hamper industrial research in this country. I see no reason why the British National Book Centre, as a department of a great national institution which is the focus of library co-operation in other fields, should not continue to provide at the minimum of expense to the country's economy one of the elements needed to sustain it.

But the staff essential to such an extension of the role to which B.N.B.C. is now conditioned can be provided only by an addition to N.C.L. funds sufficient for the purpose. This could come both from increased financial donations by member libraries (earmarked possibly for extension of B.N.B.C. activities) and by an *ad hoc* increase in the Treasury grant-in-aid to N.C.L., already exhausted by the present limited activities of that institution. I hope that bodies and individuals responsible for the encouragement of industrial research will consider seriously whether N.C.L., through the contribution which B.N.B.C. can make to advance in this field, could not give a very good return for any grant-in-aid made available for this specific purpose.

Having dealt with the present and potential activities of the British National Book Centre, it only remains for me to say a word or two about ways in which libraries in this country can help one another in the acquisition of second-hand periodicals. Perturbation has recently been expressed by the Library Association about the threat to our periodical resources from abroad, mainly in connection with the purchase of valuable sets by agents for foreign libraries or periodical dealers. Another way in which other valuable material is made available for foreign libraries, when the need of our own libraries is possibly just as great, is by the offer directly or through Unesco of duplicate material, before circulating such offers at home, either as a private enterprise or through B.N.B.C. This present plea to adopt the latter practice is amply reinforced by a recent letter in the *Library Association Record* from Mr. E. J. Carter, Head of the Libraries Division, Unesco, who points out that overloading of Unesco and irrational distribution can be avoided by the use of the National Book Centre.

Finally—and this is basic to the whole problem of rational distribution of unwanted periodicals—deal with them in time, before the problem becomes too big. Time and again we have been saddened to hear of useful collections of periodical duplicates just lying around and taking up space, with nothing being done about them. Time and again we have had to refuse loads of such material because we had not the staff to put it to use. And generally the reason behind the offer was that the material had accumulated for so long and had assumed such dimensions that it was now too late to do anything about it except clear it out at all costs. The suggestion is that offers of such material should be circulated to British libraries, either privately or through B.N.B.C., *as it becomes available*; the part immediately useful will be disposed of within a reasonable time. The balance should then be offered to Unesco or to libraries

abroad with similar interests (at B.N.B.C. this work is now suspended), and what is left can be pulped or sold with a conscience free of the dread that something good has gone for ever. Instead of filling our shelves with lumber accumulated over the years and now awaiting only oblivion, we can exchange it for live material which will advance both our library policies, and our own reputations as librarians.

NOTE. Since the above talk was given, the British National Book Centre has had to limit its activities, owing to financial stringency in the current year. While details of membership will still be available on application as stated, libraries desiring to enrol will have their names placed on a WAITING LIST for the time being.

PERIODICAL ACQUISITION POLICIES

BY KENNETH B. SHAW, A.L.A.

Librarian, British Scientific Instrument Research Association (now Assistant Librarian, Board of Trade Library)

London, 21st January, 1953

SHORTLY after I agreed to take part in this symposium, I realized that I knew very little about the acquisition of second-hand periodicals, my experience being limited almost entirely to exchanges through the British National Book Centre. I did not remember ever reading an account of the principles on which one should base one's practice, apart from the suggestion that the librarian should wait for a long run, rather than buy odd volumes ; and this questionable assertion does not seem an adequate basis for action. Further, I had no recollection of a thorough exposition of periodical selection practice in general (as distinct from the processing and use of periodicals). I did not check my memory by searching the literature, but fortunately Mr. Vickery has done so, and it seems true to say that though the principles of book selection have been formulated and expounded, periodical selection has only been subjected to preliminary investigation. Surveys, such as those quoted by Mr. Vickery, have been carried out, both on the statistical and qualitative aspects of the problem ; but the investigators have usually been concerned with one point only, rather than with policy as a whole.

In order to compare periodical selection with book selection, I therefore went back to fundamentals, and set out to write down a list of factors which seemed to me to be relevant to periodical acquisition policy. It soon became evident that periodicals are more difficult to select than books. The definition of what is meant by the word 'periodical' has exercised many of our philosophers ; the definition most generally accepted seems to be on these lines : 'A publication issued in an indefinite number of substantially different parts'. The key-word in that definition is 'indefinite', and it has very wide implications. Whereas a book, once published, is an entity which will not change (apart from physical deterioration), a periodical has the qualities of continuity and growth, and until the last issue is in the hands of readers, change is one of the few attributes that can be predicted for it. The difference is of the same order as that between the mineral and vegetable worlds ; in fact, the waywardness of some periodicals entitles them to be described as almost human.

There is not a quality of a periodical that cannot be subject to change, and Table 1 is a draft list of such variables. Of course, it is rare for many to change at once in the case of any one periodical ; while if all changed, the result would be a new publication. But it is conceivable that over a period of a century or so one periodical could suffer all these changes and still preserve its continuity, if little else. We have recently seen several

changes in one of the national dailies—change of ownership first, then change of place of printing, change of title, change of policy ; and there may be more to come.

Periodicals have other attributes, besides growth and a tendency to change. They are expensive, occupy a lot of shelf-space, and their recording, processing, etc., take up much staff time and effort. If *Chemical Abstracts* does not change too much in the next forty years, many librarians will spend about a thousand pounds apiece in subscriptions for it, to say nothing of binding costs ; while in each library forty feet of accessible shelving will have to be found for its accommodation. Perhaps I am mistaken, but it seems to me that some librarians, who would think twice before buying a book priced at five guineas or so, will agree to pay the same amount for a year's subscription to a periodical without turning a hair ; practically, they commit themselves to paying that amount annually for ever, as it is always difficult to drop a periodical when the public have got used to having it around.

The foregoing remarks apply directly to current periodicals, but it is not possible to consider second-hand periodicals fully, except in the context of periodical policy in general. Turning to second-hand acquisition, we find additional complications arise. One major factor disappears—the question of future change is not relevant, back issues being as static as books. This blessing is outweighed by other variables ; the run may be complete or fragmentary, in a condition varying from 'Handsome bindings, as new' to 'Unbound, some parts rather tattered', and so on.

Table 2 shows such factors as need to be considered when buying second-hand periodicals. The first two groups are concerned with periodical selection policy in general ; the third applies to both current and second-hand buying, while the fourth is specifically concerned with back issues. I do not claim that this list is complete ; nor do I claim that none of these headings is superfluous—it may be possible to demonstrate that any one of them is covered by the operation of the others. They should not be taken in isolation, nor should the groups be considered as exclusive ; obviously some factors are only relevant in relation to others, possibly from other groups. This is just as simple a list of necessary factors as I can produce at this stage. Incidentally, I must apologize for the wording of some of the headings ; in some cases this is the shortest way in which I can express the desired meaning, although I am well aware that the list looks like one of the less welcome communications from H.M. Inspectors of Taxes !

The purpose of the list is solely to establish a set of criteria by which to judge the value of an offered run of a periodical. I had hoped to attempt some evaluation, but at present I can only offer a few comments. It may be possible to reduce periodical selection to the application of a formula, but I am no Ranganathan, and I cannot suggest that if you multiply the price by twice the number of missing volumes, and divide by two-thirds of the original subscription, the answer will mean anything ! I shall be satisfied if this list provides a basis for discussion ; in

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TABLE 1

Nearly every characteristic or quality of a periodical may be subject to change, and a first list of such variables is given below. Although they are grouped, the order is not significant ; asterisks indicate cases where change might affect the value of a periodical to a library.

- *Title
- *Frequency
- *Price
 - Format
 - Numbering of volumes and parts
 - Pagination
- *Division into two or more periodicals, or amalgamation
- *Issue of supplements
 - Issue of individual papers as 'separates'
- Publisher
- *Town and country of publication
- *Language, and presence or absence of summaries in other languages
- *Subject
- *Breadth of coverage of subject
- *Public aimed at
- *Restriction of circulation
- *Presence or absence of :
 - Editorial comment
 - Advertisements
 - Notes on current trade topics, etc.
 - Indexes
 - Abstracts
 - Book reviews
 - Illustrations
- *The periodical can suspend publication, either temporarily, or permanently.

any case, it is better that it should be criticized and amended before anyone attempts to assess the relative importance of the various headings.

There is no time for extensive examples, but two may be illuminating. To emphasize the importance of the first group in the list, concerning the library, consider the case when Messrs. Wm. Dawson & Sons, Ltd., advertise a long run, in good condition, of a major journal at a price in the region of a thousand pounds. If the librarian of a research establishment is building up a collection on that subject from scratch, the acquisition of the set may double his resources at one stroke. If he can find the thousand pounds he will not hesitate ; he will not wait to see if a cheaper set turns up in a year or so. On the other hand, the Science Library, if they do not already possess that set, are not likely to buy it. A reasonable collection of other material on the subject ; having got along without it

TABLE 2

Tentative list of factors which *may* need to be considered before acquiring second-hand periodicals. Groupings are provisional, and should not be considered as rigid.

The acquiring library :

- Its type, (public, special, etc.) and breadth of its subject specialization.
- The completeness of its present stock.
- Material resources—space, staff, funds available.
- Public served—urgency of ordinary requests ; possibility of donations.

Relationship to other libraries :

- Are there other libraries specializing in the same field ; if so, how complete are their holdings ?
- Are they geographically accessible, and do they admit the public to consult their collections ?
- Are they willing to lend, and can they supply photostat or microfilm copies ?
- Is the acquiring library a member of the N.C.L. or other interlending schemes ?

The periodical :

- Its age, reputation, public aimed at, price, language. If in a foreign language, are there summaries in other languages ? Is it still current ? Could it be obtained by exchange ?¹
- Its subject, in relation to the library's specialization.
- Its coverage, compared with other periodicals in the same field.
- Does it contain abstracts or book reviews ? Is an index published ?
- Is the periodical analysed by any abstracting service ?
- Is it readily available from other libraries ? Is there an immediate demand for it, and would demand increase if it were acquired ?

The run offered :

- Its length and period. Reputation during that period.
- Completeness, and relation to present holdings.
- Is it bound, needing rebinding, still in parts ? Are title pages and indexes present ?
- Could any gaps still remaining be filled from other sources ? Are any issues still in stock at the publisher's ?
- Price asked. Possibility of disposal of any surplus volumes, either by sale or exchange.

in the past ; the possibility of a donation or a cheap set ; the difficulty of finding space for it ; all these would militate against acquisition.

Donations can be a valuable source of second-hand periodicals, and my other example stresses this. One of our member-firms offered us a collection of German periodicals which had been unused for some years. We accepted them on condition that we could pass on unwanted items to other libraries. They turned out to be important journals, most of the

¹ This heading was added subsequently, as a result of the discussion at the meeting.

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volumes being in good bindings. Some we kept, the others we proposed to send to the Book Centre, until we discovered that the Science Library had not got them. They were very glad to take them, and so a collection that would otherwise have been pulped went to strengthen two libraries, cost of carriage being the only expenditure.

Finally, may I suggest to Mr. Wilson that there might be material for another meeting, taking as its theme 'When and how to dispose of unwanted periodicals', and developing some of the ideas put forward to-night.

Chairman's remarks

In opening the meeting, the Chairman, MR. R. H. HILL (National Central Library), referred to the nature of the problem under discussion, which concerned all types of library and particularly the librarians of special libraries. The problem of acquiring second-hand copies of specialized periodicals essential to such libraries bore some analogy to the difficulty which had had to be faced in earlier years by the newer university and college libraries in acquiring the basic works of reference and research.

Librarians had come more and more to depend, for the building up of their collections and the filling of gaps, upon the co-operation of second-hand booksellers, whose particular problems were probably no less difficult than those of librarians themselves. The meeting would accordingly hear and discuss papers not only from two special librarians but from a second-hand booksellers' representative and from the Superintendent of the British National Book Centre, an activity which represented a new development in the National Central Library's work and a different approach to the subject under discussion.

Discussion following the papers

MR. P. W. THOMAS (The Institution of Engineers and Shipbuilders in Scotland) remarked that private libraries were usually owned by technical societies and administered by committees, the personnel of which changed to some extent each year. There was always a chance therefore of a veering in policy from time to time as the personnel changed.

All libraries were restricted in their holdings by the limitations of finance and for that reason it was desirable that full use should be made of existing holdings. This could best be achieved by co-operation between libraries on a basis of geographical regions, and it might be possible within these regions to arrange that certain periodicals should be taken only by a limited number of libraries and so ease the financial burden on them. The ranking of journals was always a difficult matter because if the librarian consulted his specialist readers they might be inclined to say that certain journals were unnecessary in the library because 'everybody buys a copy for himself'. It should be remembered, however, that private purchasers frequently do not keep back numbers owing to the difficulty of storage, and a journal that was not required for current consultation was often necessary later. In any event, the library usually had to cover a wider field than the individual specialist.

The economics of publishing had enforced a number of changes recently both on independent publishers and, particularly, on learned societies. Frequently now a member no longer obtained all the publications of the society of which he was a member, and where an exchange of publications occurred with another society the arrangement might be restricted to part only of the output. This had been particularly noticeable during the last ten years and would result in a growing scarcity of second-hand copies in the course of years as private libraries were broken up. Incidentally, the method of acquiring publications by exchange was very prevalent amongst learned societies, and this factor should be remembered in any consideration of the acquisition of periodicals.

A final point from his own practice was that as a publisher he stopped normal distribution of the *Transactions* to non-members when only two or three copies were left in stock. Every effort was taken to see that the last few copies were acquired by

libraries that could make them available to the greatest number of people, preferably in a region in which no other copy was known to be held.

MR. C. F. SMITH (Associated Ethyl Company, Ltd.) asked what staff the National Book Centre maintained?

MR. A. ALLARDYCE replied that the staff consisted of a superintendent; a senior clerk (allocations); an assistant librarian (catalogues); and a porter who also duplicated and assembled the lists.

MR. J. E. WRIGHT (Institution of Electrical Engineers) remarked that it was important to distinguish between permanent stocks and temporary stocks. It was not worth while to bother too much about the latter but one should go all-out to complete runs of the former. Indexes were very important. There was a fundamental difference between a reference collection and a lending collection. Lack of space should not be allowed to affect a policy of acquisition.

MR. H. MARLEY (Wm. Dawson & Sons, Ltd.) said that it was sometimes possible to supply 'odd' issues of periodicals; it was always worth asking.

MR. K. MALLABER (Board of Trade Library) asked Mr. Allardyce if there were still machinery for passing offers to Unesco.

MR. ALLARDYCE replied that formerly there was. Now it was difficult to do anything in this direction owing entirely to lack of staff.

THE CHAIRMAN remarked that inter-library lending and exchange were among aspects not touched on.

MR. SHAW, replying to Mr. Thomas, apologized for omitting 'exchanges' from Table 2. This omission was due to a concentration on second-hand material while compiling the list. To Mr. Wright, he agreed that there was little point in replacing missing copies of journals which were to be disposed of shortly, but wished to emphasize that there was no way of distinguishing between ephemera and material of permanent value. To a library specializing in a given subject, the completion of sets of journals of the most transitory nature could be very important.

In closing the meeting, the Chairman referred to certain important aspects of the subject which had only emerged in the course of the brief discussion. It seemed that further study might usefully take place of the availability of periodicals through inter-library lending; their acquisition by exchange; the assessment of what is required to fill gaps; a suggestion as to the possible existence of two categories of periodicals (keepable and non-keepable); and the possibility of changes of policy in any special library as it developed.

COPYRIGHT MOOT : A HYPOTHETICAL CASE OF INFRINGEMENT OF THE LAW

London, 20th February, 1953

THE narrative below has been written to illustrate various difficulties which may arise, in regard to copyright, in the work of Aslib members. The events described are all imaginary and all names are fictitious.

THE BASIC FACTS

Handmade Pinions, Ltd., had been making a vital part for chronometers for 250 years and were virtually the only suppliers of this part.

At the instigation of a big customer, they engaged Dr. Verrey Keen as a research engineer in January, 1951.

In July, 1951, Dr. Keen, while still in their employ, wrote a paper showing that the insistence of Handmade Pinions, Ltd., that the vital part must be made by hand was wrong, and demonstrated that it could be made by suitable machinery, thus eliminating a serious bottle-neck in the manufacture of chronometers required in large numbers for use in the U.K. and for export.

The Managing Director of Handmade Pinions, Ltd., Sir Manuel Makeham-Best, was immediately presented with the paper. On studying it, he wrote on it : 'To Dr. V. Keen. This is all nonsense. Obviously your work has no value for us. You may take extended leave until your contract expires at the end of the year'.

In September, 1951, Dr. Keen was asked by the Little Sleeping (Beds) Philosophical Society to give a lecture ; without reference to anyone and without taking any steps to ensure that members only were present, he read this same paper.

A member of the audience took the paper down in shorthand and sold the report to Mr. Galley, the Editor of the *Chronometer Saturn*, who published it in full in December, 1951.

On 1st January, 1952, Dr. Keen started in new employment with the Chronometer Research Association. At a Symposium held by this Association in March, 1952, attended by representatives of members, the following happened :

- (a) At the request of the members present, Dr. Keen read his paper again, and there was a discussion on it.
- (b) Mr. I. Helpham, the Information Officer of the C.R.A., demonstrated a new photo-copying machine. At the request of each of the thirty-five members present, he helped each one to make a single copy of Dr. Keen's paper in the *Chronometer Saturn* during the demonstration.

The matter then received considerable publicity, and on 1st April, 1952, the *Daily Mammoth* wrote up the story as showing the lack of initiative of British industry. On 2nd April, 1952, a question was asked in the

House by the member for Little Sleeping, and a big demand arose for copies of Dr. Keen's paper.

The parties agree on the facts as set out in this document, and each has agreed to present his claims on the basis of these facts before a lawyer.

CLAIMS BY THE PARTIES

DR. KEEN claims :

- (a) copyright as the original author.
- (b) that Handmade Pinions, Ltd., had disclaimed any interest by the 'nonsense' statement of Sir Manuel Makeham-Best.
- (c) that in repeating the paper at the C.R.A. meeting he was merely reading a published journal in a private gathering.
- (d) that the thirty-five copies of the paper in the *Chronometer Saturn* were made individually for private study and research, and that the publishers of the *Chronometer Saturn* had signed the 'fair copying declaration'.

HANDMADE PINIONS, LTD., claim the copyright on the grounds that Dr. Keen wrote the paper in the course of his employment and must be considered as having been commissioned to write it by Handmade Pinions, Ltd. At no time had they formally disclaimed their copyright interests, and Dr. V. Keen gave his lecture in September, 1951, without their permission.

THE EDITOR OF THE *Chronometer Saturn* claims :

- (a) The copyright at least so far as the presentation of the paper in his journal of December, 1951, was concerned.
- (b) That Dr. Keen had given no indication that the meeting of the Philosophical Society was private and had put up no notices to indicate that the lecture was to be considered as copyright.
- (c) That in the circumstances it is immaterial as far as he is concerned whether the original copyright belongs to Dr. V. Keen or to Handmade Pinions, Ltd.
- (d) That Mr. Helpham, the Information Officer, had deliberately produced and circulated thirty-five copies of the paper as published in his journal in infringement of his copyright; the actual mechanics of reproduction were a mere blind, there being no question of single copies being made for private study or research.

MR. HELPHAM (C.R.A. Information Officer) claims that he was fully entitled to make a single copy of the paper (the publishers having signed the 'fair copying declaration') for any member of his association for the purposes of private study or research. He has no reason to doubt that each copy was, in fact, wanted for such a purpose.

PROCEDURE AT THE MOOT

Dr. Keen, Sir Manuel Makeham-Best, Mr. Galley and Mr. Helpham (impersonated by Aslib members) each presented his case on the basis of the facts given above.

A member of the legal profession commented on the case.

The meeting was then open for discussion.

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STATEMENT BY DR. VERREY KEEN

(E. B. UVAROV, *Courtaulds, Ltd.*)

I hope that you will allow me to outline a few simple technical facts which, although obviously familiar to most of you, have some bearing on the case.

You all know, of course, the design of the erratic convolute pinion which is an essential part of the drive in the peristatic chronometer ; but it is perhaps not so well known that its characteristic formula, as originally derived by Schwillenstein, is :

$$R = 2 mk \cos \theta (E + r^2 t) + \log \tan W.$$

The simplified form generally used is based on the assumption that W is very nearly 45 degrees under normal conditions and the last term therefore vanishes. In my paper I was able to show that the use of the simplified form is the cause of the accepted but erroneous view that at high speeds of manufacture the Gudermannian function tends to a cube, thus exceeding the transition point of the alloy. You will see that if the last term is not ignored this cannot be true at any speeds below that of light, and therefore slow manufacturing speeds are not necessary.

Part of my research work at Handmade Pinions, Ltd., approved by the Directors, was to determine the maximum safe speed of making the pinions, as it had always been thought that even the speeds used in hand manufacture were dangerously near the transition limit. In this work I found that quite high rates of working had no effect on the alloy. This led me to question the accuracy of the simplified Schwillenstein formula ; it proved possible to show mathematically that the simplification was based on a fallacy, and that slow speeds of production were quite unnecessary. The designing of suitable machinery for the process was then a relatively simple matter. (In reply to a question Dr. Keen said, 'No one worried about my hours, I rather think I was a sort of consultant'.)

At that time I was too busy to pursue the problem as part of the Company's research programme ; but the mathematics interested me so much that I did the mathematical analysis and typed the results at home, appending details of the machinery which would be suitable. It then occurred to me that my findings might have some commercial implications, and therefore I felt I should let Sir Manuel see the paper immediately and before anyone else. I was very surprised and hurt by his reaction to it.

Although I do not know much about copyright, I am convinced that my claims are sound. The paper was written in my own time, with my own stationery and typewriter and it embodied my own special knowledge. I submitted it unconditionally to Sir Manuel, who rejected it out of hand. It was perhaps rather foolish of me not to have kept the copy which I had given to him ; as far as I can remember, I left it behind with a lot of other papers. It seems obvious that, at that stage, I was the sole owner of the copyright.

Next, when already on my extended leave, I was asked to give a paper

to the Little Sleeping Philosophical Society. I naturally chose to present my discovery of the fallacious simplification of the Schwillenstein formula; the simplest way to do this was to read the paper I had submitted to Sir Manuel. This paper, as I have said, included details of machinery for making the pinions, although from my point of view this was a minor issue, and one which, as I see now, would have been better left out. I assumed that the meeting was private and I had no reason to suspect that non-members might be present; but I must say that I was a very rare visitor to the Society's meetings and knew few of the members by sight.

After my paper had been given, I went on a cycling tour without leaving an address for correspondence. I therefore did not receive any letters about my paper until my return late in November, when I found a letter from Mr. Galley enclosing proofs of the proposed publication in the *Chronometer Saturn*. There was also a letter from the Secretary of the Little Sleeping Philosophical Society, explaining that he had tried several times to get me on the telephone.

(In answer to a question by the 'judge', Dr. Keen replied, 'No, I did not actually give consent'.)

Next, as you know, I read this paper at the Chronometer Research Association Symposium. Even if I had lost the copyright by then, which I do not accept, I do not believe that I infringed anyone else's ownership by reading the paper. If I was the owner, I had no objection to copies being made at the Symposium; if I was not, the copies were still made fully in accordance with the fair copying declaration.

STATEMENT BY SIR MANUEL MAKEHAM-BEST

(FRANK SMITH, *Royal Aeronautical Society*)

I have no wish either to argue with Dr. Keen on technical matters or to confuse my audience with abstruse mathematics; we are only considering the ownership of the copyright.

Dr. Keen was recommended to me as a very able and enthusiastic research engineer with the highest qualifications and an excellent academic record. We appointed him in 1951 to be in charge of our programme of research and development. At the beginning of the year he was told the general lines on which the work was to proceed; the aim was to improve our existing methods of manufacture, but Dr. Keen was to be responsible for deciding what particular problems were to be studied with that aim in view. In fact, we gave him a free hand in applying his knowledge and skill to furthering the interests of Handmade Pinions, Ltd. It was left to him to report his results and recommend modifications at his discretion, and he was not subjected to any supervision.

I was therefore surprised, to say the least, that the first report which I received from him should have been a badly typed paper, full of obscure calculations, of which the only part to affect Handmade Pinions, Ltd., was his claim that our methods are wrong. If the paper had any signi-

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ficance at all, it meant that Handmade Pinions, Ltd., should go out of business.

We were, as I have said, prepared to give Dr. Keen a great deal of freedom, but we were not prepared to let him use our facilities and pay him a salary for working in direct opposition to our interests. It was obvious that Dr. Keen's work, whatever its academic merit, was not in our interests and I decided that his contract would not be renewed and that it would be to our advantage to part company with him at once.

This does not mean that we disclaimed our copyright ownership of the paper. Whether it was typed in official working hours or not seems immaterial ; Dr. Keen never was guilty of a slavish adherence to official times and was not subjected to any control in this respect ; the subject matter was entirely based on Dr. Keen's work in our employ and the paper must therefore be our property. Our condemnation of the paper is not the same as a disclaimer of copyright, since the paper, in unscrupulous hands, could be easily used as a weapon against Handmade Pinions, Ltd. In fact, Dr. Keen's successor, Mr. Crawley, has already presented me with a report showing that there is an error in arithmetic in Dr. Keen's paper (resulting from the use of an electronic computer which he insisted on installing in his laboratory), and it is our intention to permit Mr. Crawley to publish this in the near future. The position is therefore that a paper which we believe to be both damaging and erroneous, but which is our legal property, has been read, reported, printed and duplicated without our consent.

STATEMENT BY MR. GALLEY

(F. B. ROBERTS, *Engineering*)

When we bought the report of Dr. Keen's paper we were paying only for the report of a meeting prepared by a shorthand reporter. The payment was not a payment for the paper itself.

In common with most scientific and technical periodicals, we never publish a lecture that has been given to a society without first obtaining the permission of the society, unless, of course, there is a standing agreement that we may do so. As between societies and periodicals, it is usually understood that, when a paper is presented to a society, the copyright of the paper becomes the property of the society, and it is not necessary for the editor of a periodical to ask the author for permission to publish the paper.

Therefore, when I received the report I wrote to the secretary of the Little Sleeping Philosophical Society for permission to publish it. At the same time I asked if I might borrow a set of the illustrations which are an essential part of the paper. I received both the permission and the illustrations.

I would have been happier with the author's own typescript, but I was unable to contact him quickly to obtain it ; the secretary of the society said that Dr. Keen was difficult to get hold of during his extended leave.

However, when the galley proofs and proofs of the illustrations were

ready, I sent one set to the secretary of the society and one to Dr. Keen for their approval and for their corrections, if any. The secretary replied that he was quite content to leave the correcting to Dr. Keen, and Dr. Keen returned the proofs with a few minor corrections which we incorporated before publication.

I hope it will now be clear that the *Chronometer Saturn* does not claim the copyright of Dr. Keen's paper. We do claim, however, the copyright of the particular form of presentation of the paper in our journal. This applies especially to the line illustrations, which were re-drawn in our office for block-making purposes. So far as we were concerned, the paper had been given, or presented—I think those words are significant—to the society.

Now, regarding the photo-copying of the relevant pages of the *Chronometer Saturn* at the C.R.A. meeting. As you know, we subscribe to the Fair-Copying Declaration issued by the Royal Society in 1949.

But, in the preamble to that declaration the following words occur : 'It is assumed that they (i.e. scientists requiring copies of papers) take all reasonable steps to secure the original journals or separates of papers they require—'.

Mr. Chairman, I submit that the thirty-five members of the C.R.A. who were supplied with photo-copies of these pages of the *Chronometer Saturn* by Mr. Helpham had not 'taken all reasonable steps to secure the original journals'. I am sure of this because, ever since the December, 1951, issue of the *Chronometer Saturn* was published, we have had stocks either of that issue or of separates of Dr. Keen's paper.

Furthermore, the declaration itself says :

'We (that is to say, the proprietors of a journal) will regard it as fair dealing . . . when an organization makes and delivers a single reproduction of a part of an issue . . . to a person or his agent representing in writing that he desires such reproduction . . . '.

It is quite clear, I think, that the thirty-five members did not, individually or collectively, make such a representation in writing to Mr. Helpham.

Therefore, since the terms of the Fair-Copying Declaration were not adhered to in two particulars, Mr. Helpham cannot claim protection.

We do not intend to take any legal action in this matter. Ignorance of the law is no excuse, but I can well imagine that, since the phrase 'It is assumed that they take all reasonable steps to secure the original journals . . . ' is in the preamble to the Declaration but not in the Declaration itself, many scientists are not aware of their personal responsibility in this connection.

I therefore suggest that the Royal Society should be asked to consider the possible revision of the declaration so that it would read :

'We will regard it as fair dealing . . . when an organization makes and delivers . . . to a person or his agent representing in writing that he desires such reproduction in lieu of a loan or manual transcription and that he has taken all reasonable steps to secure the original journals or separates of papers . . . '.

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STATEMENT BY MR. I. HELPHAM

(J. WHITE, *British Internal Combustion Engine Research Association*)

As the Information Officer of the Chronometer Research Association, I was the executive who facilitated the making of the thirty-five copies of Dr. Keen's paper, which the Editor of the *Chronometer Saturn* claims was a deliberate infringement of his copyright. I trust everyone is duly impressed by the almost too perfect legal correctness of many of the statements made to-night, but being the last defendant let me tell you of some of the things that really happened. In the first place I submit there was no infringement by the C.R.A. on the grounds that :

- (a) the making of the copies was permissible under section 2 (1) (i) of the Copyright Act, 1911, and under the Fair Copying Declaration which the Editor of the *Chronometer Saturn* had signed.
- (b) the copies were made without the use, in the copyright sense, of any material on which the Editor of the *Chronometer Saturn* could claim copyright.
- (c) the Editor of the *Saturn* was not the owner of any copyright, since any authority he had from the Little Sleeping Philosophical Society was invalid. For example, an author who is not the copyright owner cannot present the copyright to a learned society, and this may be the position in the present case.

I appreciate that if it is found that Handmade Pinions, Ltd., are the owners of the copyright, I have another case to answer, but I ask leave to deal with that later.

May I review the events so far as C.R.A. are concerned ?

Dr. Keen joined the staff of the C.R.A. on 1st January, 1952, and as I had read his paper in the December issue of the *Saturn*, I took an early opportunity of discussing it with him. He handed me a typewritten copy of his paper, and mentioned that it was the last spare copy. He had made four copies on an old typewriter he had at home, and from the appearance of the copy given to me, it had not been made by a professional typist. Dr. Keen assured me that no other copies had been made with his knowledge and consent ; one copy had been handed to Sir Manuel, he still retained a copy, and the fourth had been handed to the Secretary of the Little Sleeping Philosophical Society for reproduction in the *Transactions*. The Society's transactions are invariably erratic in their date of issue, but normally they would appear by the beginning of the next session, say October, 1952. They have not been issued, and I suggest there is a very good reason, not unconnected with the present proceedings.

On comparing the typewritten copy with the *Saturn* article I found they were substantially identical, the main difference being that all reference by number to the figures had been deleted. Naturally, the figures were not included in the shorthand report. However, Dr. Keen had described the figures in considerable detail, and Mr. Galley was able

to disguise the omission by minor adjustments in the text. Only the specialist seeking to carry out Dr. Keen's findings under a variety of conditions would require the information regarding intermediate values provided by the figures. Mr. Galley says the figures were included and I must ask him to explain why they do not appear in the copy I received in the normal distribution, and which I have here. Then again, Mr. Galley says he would rather have used the author's copy instead of the shorthand report. Now Dr. Keen gave the Secretary of the Little Sleeping Philosophical Society a copy, and although Mr. Galley says he obtained from the Secretary permission to publish the report, and borrowed copies of the figures, he could *not* borrow the paper to copy, but had to use the shorthand report he paid for—a little curious I suggest?

There is a point which it is essential should be understood, namely that, so far as the chronometer industry is concerned, we are not discussing an ordinary paper. The results given in the paper are of very great and immediate importance to the industry.

It is common knowledge in the industry that Handmade Pinions, Ltd., have had a monopoly in the making of Erratic Pinions for about 250 years. The difficulties and costs of obtaining the essential skilled craftsmen in adequate numbers, and the 'know-how' in the preparation of the special material, has deterred other companies from making their own pinions—independent of their views on the strength of Handmade Pinion's present patent position, which, of necessity, is now based on patents for minor improvements. It is also well known that, in the increasingly competitive conditions obtaining at the present time, the high price charged for these pinions was an embarrassment to the industry, while the large profits made by Handmade Pinions, Ltd., were a cause of envy. In these circumstances, the industry was extremely anxious to find an alternative to the Handmade Erratic pinion.

At the February, 1952, meeting of the Research Committee of C.R.A., Dr. Keen's paper was discussed during lunch, and the matter was raised at the end of the meeting. The Director of Research was asked to prepare immediately a programme concerning the development of the machines and the testing of the new gears for discussion at a special meeting. There was no doubt about the importance of the matter, and even less doubt that members wanted a copy of the paper for private study and had not been able to get one. The *Chronometer Saturn* is not one of the essential technical journals for the industry, and many members of the Association do not subscribe to it, being content to borrow from the Association's library the odd copy which, from our abstracts, they find contains something of interest to them.

Earlier in the same meeting some favourable comments had been made on the improved standard of reproduction of our Research Reports, with reduction in costs, and after I had given a brief description of the new process used, I was requested to arrange a demonstration of it during the next visit of members to the Laboratory, and preferably at the conclusion of the Symposium already arranged for 13th March.

Early in March the Director of Research was asked by the Chairman

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of the Research Committee to arrange that Dr. Keen would be prepared to read his paper on the day of the Symposium, if the majority of the members present favoured this change in the programme.

Following the Research Committee meeting, I had two things to do, firstly to arrange a demonstration of the new DUOLITH printing process, for which I required new copy, and secondly, to find a way of making copies of Dr. Keen's paper available to committee members. Dr. Keen preferred that copies of his paper should not be available to members until after the meeting. In the circumstances it seems reasonable to use Dr. Keen's paper as copy for the demonstration. Mr. Galley says spare copies and separates were available, and if this is so it was the first time in the history of the *Saturn*—all our members were unable to obtain copies, and when I made enquiries that is certainly not what I was told by his Secretary, Miss Print.

I arranged for the necessary printing plates to be prepared, the cover page carrying the usual announcement restricting the purposes for which the copy could be used and prohibiting further reproduction. I also had plates made of the figures and these were traced in our Drawing Office from Dr. Keen's originals. I had the choice of using Dr. Keen's typescript or the *Saturn's* printed copy. As the preparation of the plates is a photographic process, the printed copy was an obvious choice, particularly as the typescript was in poor shape. I did not have the copies run-off because the quality of the reproduction by this process was not in doubt, having been proved by the high quality of the Research Reports already issued; what was in doubt was the degree of skill necessary to produce copies of this quality. Actually, although the obtaining of first-class copies on both sides of the paper at one setting appeared complicated, I was satisfied that the skill required was of a very normal order. An obvious way of proving my point was to invite the members to make their own copies. I was convinced that they would all succeed in making readable copies, and that these copies would fulfil their other requirements. It will be seen, therefore, that the actual mechanics of reproduction were not a mere blind, as has been suggested.

Naturally I gave considerable thought to the copyright position, but before stating my case there is an extremely important point which I ask should be considered.

Co-operative research is established in industry and it is certain to remain. It is a part of Government policy, is State subsidized, and every effort is being made to extend it, so there is little probability of it being abandoned. I do not suggest that the days of the individual research worker, operating in isolation, are over, but the research work carried out in this way is becoming an increasingly small proportion of the total. Co-operative research, in its broadest aspects, is controlled by committees, so that the permission to make one copy for research purposes has no value to co-operative research. In the present case there is no doubt that the Research Committee required to be informed in considerable detail regarding Dr. Keen's proposals, in order that they could fulfil their function of ensuring that the programme of research proposed by the

Director of Research and Dr. Keen would in fact provide the information urgently required by industry to enable the pinions to be manufactured by the new process, and to prove whether the pinions so manufactured would give service equal to the Handmade pinions. Dr. Keen's proposals were complex and a good deal of study was necessary to understand them thoroughly.

I appreciate that on this question of fair dealing we are concerned with the law as it is, and not as it should be, but I beg leave to doubt if the Courts would interpret the law in a manner which would deliberately handicap co-operative research. If there is any doubt on this point, I suggest it should be made very clear in any future amendment of the Copyright Act.

I discussed the question of copyright with Dr. Keen and he assured me that neither he nor Handmade Pinions, Ltd., had authorized the publication in the *Chronometer Saturn*. He stated that he considered himself the owner of the copyright, and when I suggested that there might be some doubt about this, as he was an employee of Handmade Pinions, Ltd., he assured me that Handmade Pinions, Ltd., had disclaimed any interest in the paper.

I did not feel justified in pressing this point too closely, but as I was not satisfied I decided that, if called upon to justify my actions, I would rely in the main upon fair copying for my defence.

The Symposium was duly held on 13th March, and towards the middle of the afternoon the Chairman proposed that Dr. Keen be asked to read his paper, and this was agreed. The discussion was intense in the eagerness to elicit further information. Eventually, members proceeded to the Duplicating Room for the printing demonstration, all accepted the invitation to make a copy for themselves, and all succeeded in making a very fair copy. There was no doubt about the popularity of the text chosen as the subject of the demonstration, but not one member asked for a second copy.

My case is that each of the thirty-five copies was made for private study and for research purposes, that each copy was made and used independently by a different individual and although I facilitated the making of the copies, I did not actually make them. I submit that it is immaterial that after studying their copy privately, the members met to discuss the most profitable lines of further research. My actions were within the scope of section 2 (1) (i) of the Copyright Act, 1911, and in addition Mr. Galley had signed the Fair Copying Declaration on behalf of the *Chronometer Saturn*.

I mentioned earlier that I had the choice of copying Dr. Keen's typescript or Mr. Galley's published article, so that quite independently of Mr. Galley I had available to me the full text of the paper, the author's particular and original expression of these new thoughts and ideas, and in the very form and sequence of the words used, complete in every detailed particular.

In what way then did I infringe Mr. Galley's copyright? in the selection of the fount or size of the type? the arrangement of the number

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of words in a line ? or was his printed page so beautifully arranged that it ranked as one of those works of art which must not be photographed—which is all I did. I contend that I did not infringe Mr. Galley's copyright, always assuming that he has any.

I admit that I am indebted to Mr. Galley's unauthorized publication for my defence under 'Fair copying', since delivery of a lecture in public is not publication and there can be no fair copying of an unpublished paper. This is, for me, a fortunate circumstance, of which I had knowledge before I made the copies.

Regarding the shorthand report made at the meeting, I suggest this is a case where a contract may be implied on the part of persons attending a private lecture not to take down, for future publication, the text of the paper read.

In short, the publication of Dr. Keen's paper in the *Saturn* was :

- (a) without consent of the author and the copyright owner, if these are not the same person—while
- (b) the meeting was private, not public, so that notices under section 2 (1) (v) were not required
- (c) the shorthand report, made by a member, was a breach of confidence
- (d) the copyright owner was entitled to an injunction to restrain use of the shorthand report.

In view of the good relationship between Dr. Keen and the C.R.A. I agree that a decision favourable to Dr. Keen would be favourable to the Association.

(Following a question by Counsel, Mr. Helpbam continued)

Certain technical matters have been mentioned in this legal discussion, and I must ask leave to categorically deny Sir Manuel's statement that there is a mistake in Dr. Keen's formula. There are some high-class mathematicians on the staff of the Association and they have found no fault with it, but the proof is in the fact that we have adapted a machine to shape the new pinions and although they are not as accurate as we will get on the new machines we are designing, nevertheless, on test, the pinions have given a higher efficiency than we have ever obtained with a Handmade Pinion.

The lucrative monopoly in the manufacture of erratic pinions which Handmade Pinions, Ltd., have enjoyed for so long is about to be broken.

May I conclude by expressing my appreciation of the decision, by the *Saturn* and Mr. Galley, not to take legal action against the Association and I accept this decision as an expression of their genuine interest in the well-being of the chronometer industry, and not as an assessment of the legal position.

(In accordance with professional etiquette, the member of the legal profession who kindly came to comment on the hypothetical case outlined above must remain anonymous. His opinion of the case as a whole is summarized, but since anonymous 'judgments' are not, in general, desirable, it has been decided not to publish his answers to questions put forward by members in the subsequent discussion. Some

of the remarks and questions themselves, however, are reproduced below because it is felt that they may be helpful in reminding readers of various aspects of copyright law on which expert opinion should be sought in any actual case.)

SUMMARY OF COMMENTS

BY A MEMBER OF THE LEGAL PROFESSION

The first question to be decided was whether Handmade Pinions, Ltd., or Dr. Keen was the first owner of the copyright under Section 5 (1) (b) of the Copyright Act, 1911. This involved a consideration of whether there was a contract of service and, if so, whether the work was made in the course of Dr. Keen's employment. It was also necessary to consider whether Handmade Pinions, Ltd., had disclaimed any rights which they had as a result of their managing director's comment. On the evidence it appeared clear that there was a contract of service and that Dr. Keen was not a consultant but a servant of the company. It also appeared to be reasonably clear that the paper was not produced in the course of Dr. Keen's employment, since he was not employed to do anything except improve existing methods of manufacture. On this basis, Dr. Keen was the first owner of the copyright, and the question of disclaimer by Handmade Pinions, Ltd., did not strictly arise, although if the company had been the first owner it was unlikely that they had disclaimed any rights in the circumstances.

With regard to the meeting of the Philosophical Society at which Dr. Keen read his paper, it was important to determine whether the meeting was a public or a private one. After consideration of the authorities, it seemed clear that the meeting was private, so that the sale of the shorthand note taken by a member of the audience was a breach of confidence and its publication in the *Chronometer Saturn* was an infringement of Dr. Keen's rights. For the purpose of the Moot it could be assumed that the report in the *Chronometer Saturn* possessed sufficient originality to entitle it to copyright, subject to Dr. Keen's rights against the newspaper.

It remained therefore to consider whether the production of thirty-five copies of the newspaper account was 'fair copying' within the meaning of Section 2 (1) of the Act. After consideration of the authorities, it appeared clear that neither the Act nor the Fair Copying Declaration afforded any defence. However, since everything done at the symposium was done with the consent of Dr. Keen, who could restrain further publication of the *Chronometer Saturn's* report, it was improbable that any action would lie, other than on purely technical grounds, against Mr. Helpham or the members of the Chronometer Research Association.

Discussion

MR. J. E. WRIGHT (Institution of Electrical Engineers) asked, 'If a printed invitation to attend the meeting of the Research Association had included an application form for a photocopy of Dr. Keen's paper and each of the thirty-five members had signed it,

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would the preparation of thirty-five copies by the Information Officer be permissible as thirty-five single copies individually required?'

MISS I. M. SLADE (British Iron and Steel Research Association) said that it was stated by Mr. Galley that Dr. Keen returned the proofs of his lecture (as published in the *Chronometer Saturn*) to Mr. Galley with minor corrections. Did this not amount to consent to publication by Dr. Keen?

MR. L. J. H. HAYLOR (Ministry of Supply, TPA/3 (T.I.B.)) commented that the judgment for Dr. Keen was mainly based on the assumption that as he was employed to do research in the interests of the firm, his report, which appeared to be so inimical to those interests, did not fall within the terms of his contract with the firm. He suggested that the assumption that the mass-production methods found by Dr. Keen to be practicable for a device hitherto made only by hand might, in fact, not be against the interests of the firm who could well, by Dr. Keen's methods, greatly increase their output. Dr. Keen, in fact, might have thought that the entirely new method he advocated was really in the best interests of the firm. In that case the judgment in Dr. Keen's favour and against the firm would be based on a wrong assumption.

MR. J. E. L. FARRADANE (Tate & Lyle Research Laboratories) remarked that Dr. Keen had said that he wrote the paper in his spare time. As Dr. Keen's hours were most irregular, and were recognized as such by Sir Manuel Makeham-Best, was it not clear that at no time could it be said that Dr. Keen was not working for Handmade Pinions, Ltd.?

MR. A. H. HOLLOWAY (Ministry of Supply, TPA/3 (T.I.B.)) said that it was stated in evidence, and not contradicted, that Dr. Keen had the assistance of a skilled employee of the Company. Did this not mean that the information he obtained with this assistance and incorporated in his paper was the property of the Company and should not have been disclosed without its specific permission?

MR. J. SMITH (British Transport Commission) asked :

- (a) 'What would the position be if Mr. Helpham had made all thirty-five copies himself?'
- (b) 'What would the position be if the Chairman of the C.R.A. Meeting had announced that copies of the paper were about to be made and asked any of those present who wanted one to sign the sheet of paper provided?'

MR. STEVENSON (British Internal Combustion Engine Research Association) asked, 'If the individual members of the C.R.A. had each placed separate orders with a commercial concern whose business it was to make copies (such as Photostat, Ltd.), would that have been an infringement?'

MRS. A. M. WHITROW (Incorporated Society of Auctioneers) said the Editor of the *Chronometer Saturn* claimed that he had obtained permission from the Secretary of the Philosophical Society to report Dr. Keen's paper. Does the copyright ever pass over from the author to the society before which it is read, or does it remain his?

MR. R. LINNEY (United Steel Companies, Ltd.) asked, 'Supposing there had been a clause in the contract between Makeham-Best and Keen, giving the former all rights to copyright or invention, then could not his written rejection of the paper have been tantamount to a renunciation of any claim?'

MR. FARRADANE said that, even if Handmade Pinions, Ltd., did not stipulate, in their contract with Dr. Keen, that any invention of his was to be the property of the firm, was it not correct to say that Dr. Keen could not have written his paper without access to the experience and secrets of the firm, so that the firm should have had rights in regard to the paper.

MR. K. B. SHAW (British Scientific Instrument Research Association) asked for further information on the question of 'permission to publish'. Assuming that Dr. Keen had given permission to the *Chronometer Saturn* to publish his paper, was he still entitled to give his consent to publication in the *Transactions* of the Little Sleeping Philosophical Society, or in any other periodical?

MRS. BONHOMME (General Electric Co., Ltd., Coventry) said, 'In the matter of invention, improvements to headings, layout, etc., by which the Editor of the *Chronometer Saturn* acquired the copyright, is this done purposely by editors and, if so, does it account for the fact that one so often hears people say, after having presented a paper, that they do not recognize it when it appears in print?'

DR. M. GOTER (Ministry of Supply, Aylesbury) supported the remarks of previous speakers that the written comment of the Managing Director on Dr. Keen's paper did not suggest that he had repudiated his claim to the ownership of the copyright of Dr. Keen's suggestions. She said that from the firm's point of view the Managing Director was right in stating that the ideas set forth by Dr. Keen were 'nonsense and of no use to us'. If Dr. Keen's ideas had been put into practice the firm would have gone out of business.

MR. STEVENSON asked, 'On the analogy of inventor's rights, did not his employer's rejection of his work entitle Dr. Keen to publish it, for would it not be contrary to public interest if his employer could smother a useful idea that happened to conflict with the employer's interests?'

MR. D. SCOTT WILSON (North Thames Gas Board) said, 'A previous questioner implied that Dr. Keen might have been compelled to resign in order that his process for making pinions by machine might be suppressed by Handmade Pinions, Ltd. Is it not a fact that such suppression would be very difficult? If there were no patents involved, Dr. Keen could always take his process to another firm after his resignation. If there were patents covering the process or plant, then, if *Handmade Pinions, Ltd.*, attempted to suppress the invention, application could be made under the Patents Act for the patents to be endorsed Licence of Right, in which case the grant of a licence to Dr. Keen himself or to any other firm he had interested in the process could be ensured—or, presumably, Handmade Pinions, Ltd., could be made to work the process.'

MR. A. J. DEEMING (Individual member) asked what would the legal position be of a company circulating copies taken from technical journals to members of its staff?

MISS NICHOLSON (Royal Holloway College) said that, as she understood it, there were two points in favour of Dr. Keen's ownership of copyright:

- (1) The work in question was not what he was appointed to do.
- (2) In any case he did it in his own time.

What would have been the position had he done work for which he was not appointed wholly in his employer's time?

MR. J. SYKES (Furniture Development Council) asked whether it would have made any difference if the Research Association had made the copies and sent them out on loan?

MRS. BASSETT (Oxford University Press) asked whether, if the thirty-five people requesting copies of Dr. Keen's paper in the *Chronometer Saturn* and the Information Officer had all been employed by one firm, would each of the thirty-five copies still have counted as an individual copy?

MR. J. WHIRRE (British Internal Combustion Engine Research Association) enquired, 'As punitive damages are never awarded, can it be assumed that the reason why legal action is not taken for infringement, if only a few, or even thirty-five copies are involved, is the small damages that could be awarded?—exception being cases where considerable prestige is involved?'

FACTS CONCERNING PATENTS, OF PARTICULAR INTEREST TO INDUSTRIAL LIBRARIANS AND INFORMATION OFFICERS

BY GEO. H. DAVISON

Secretary, The United Steel Companies, Ltd., Research and Development Department

Manchester, 30th January, 1953

INTRODUCTION

TO keep this paper within measurable compass, I propose not to discuss the history of British Patent Law except to point out that the 1624 Statute of King James, which covered the original law of patents in a single clause, has been replaced in the 1949 Act by 103 clauses followed by three formidable schedules, this being the 32nd Patents Act to be placed upon the Statute Book.

The most successful patents have been taken out for quite simple things, often by people quite unassociated with the trade they cover. A farmer invented the typewriter; a painter (Morse) invented the telegraph; a bank clerk invented the hand camera, and so on.

According to Mr. W. A. Bagley in his book *Everyman inventor*, although some women have excelled in invention, normally the feminine mind does not seem so adaptable as the male. Perhaps a woman is more patient. She will wash up greasy dishes year after year, whereas, given the same job, a man will soon be wondering how to devise some method of lightening the task. In any case, women accounted for less than one per cent. of inventions in 1951.

In the metallurgical sphere, by far the majority of research workers are following a programme set for them by higher executives; hence the invention may frequently be said to precede the use of the research facilities, the latter having the function of proving the invention, although it is equally true to say that trained observation during the course of research work can likewise inspire an invention.

It is doubtful whether a free-lance inventor can compete nowadays with the great industrial concerns which maintain large teams of paid research workers with the most up-to-date equipment, although it is a fact that in the past private individuals invented the safety razor, the electric car starter, case hardening of steel, monotype, diesel engines, bakelite, the gyro compass, calcium carbide, etc.

As to the profitability of inventions, few things pay better than patented toys. The roller skate brought the inventor £200,000; the ball with elastic attached yielded an income of £10,000 per annum, and so on. You may also remember that the Government awarded Sir Donald Bailey £12,000 in connection with the Bailey bridge, Sir Frank Whittle £100,000 for his jet propulsion and gas turbine inventions, and £94,600 to various claimants in connection with the invention of radar, amongst

this being an award of £50,000 to Sir Robert Watson Watt, all of which amounts were free of income tax. However, many first-class ideas often fail for want of adequate financial backing, and to counteract this the Development of Inventions Act, 1948, was introduced. Under this Act, the National Research Development Corporation has the function of ensuring the development or exploitation of inventions where the public interest so requires, particular stress being laid on inventions resulting from public research but without limiting the Corporation thereto.

Many of the inventions of the past would not now fulfil the essential conditions of the new Patents Act. There are many interesting examples of this. I might perhaps quote the following by way of light relief :

A DEVICE FOR KEEPING COOL WHEN HIKING. The heels of the boots are like small bellows and a flexible pipe leads from them to the inside of the hat, so that when walking, gusts of cold air are directed to the heated brow.

A DEVICE FOR KEEPING THE FEET WARM IN COLD WEATHER. A flexible tube conveys warm air from the mouth to the shoes.

PROTECTION AGAINST BEING BURIED ALIVE. Air pipes are provided from the top of the coffin to the open air. When the unfortunate occupant returns to life, he pulls the string, opens the air pipe and rings an electric bell.

Still another invention was one for the cremation of relatives, grinding down the ashes of the bones into a powder for incorporation into a plastic composition for making door handles or umbrella handles, thus ensuring service from relatives even after death.

MAJOR CHANGES INTRODUCED BY THE NEW ACT

(a) *The applicant.* Hitherto the inventor had to apply for the patent either alone or jointly with others and had to remain the applicant until the grant was made. To-day he need not be the applicant, but can assign the right to apply.

(b) *Priority dates.* Each claim rests on its own date which it inherits from provisional, complete or convention specifications. It is now clearly recognized, for instance, that the complete specification may contain additional *related* inventive matter.

(c) *Opposition.* The grounds for opposition have been extended.

(d) *Secret inventions.* Provision is made for the prosecution of patent applications for secret inventions up to the stage of acceptance but not of publication or grant. The need for secrecy is determined by a Government Department, but provision is made for review of the matter once a year. The patentee, of course, can seek compensation for any hardship imposed by the secrecy.

(e) *Amendment of specification.* Provision is now made for the grant of a patent of addition to a patentee who finds that he has drawn his claims too narrowly to include *obvious* modifications of his invention.

(f) *Compulsory licences.* Three new grounds of attack are created :

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1. when the invention is not being worked in the United Kingdom to the fullest extent reasonably practicable ;
2. when the export market is not being supplied ;
3. when the working of another patented invention which makes a substantial contribution to the art is being prevented or hindered.

(g) *Infringements.*

1. An exclusive licensee can now sue for infringement as if he were the patentee.
2. A person can take the initiative and seek a court declaration that what he is doing or proposing to do is not or would not be an infringement.
3. Infringement proceedings may, if agreed between the parties, be tried by the Comptroller.

(b) *Special Patent Judge.* In the Amending Patents and Designs Act, also of 1949, provision is made for an increase of one in the number of high court judges, to allow a judge specially qualified in patent matters to be appointed.

WHEN IS A BRITISH INVENTION PATENTABLE?

Essential features. The following features are now essential for every British Patent :

1. The invention must consist in a manufacture, not merely a discovery or a theoretical principle ; it may cover an article, a method or a process of manufacture or of testing.
2. The invention must involve an inventive step and must not be obvious.
3. The invention must be new ; this means that it must not be anticipated by knowledge available to the public in this country on the priority date, owing to prior use or prior publication.
4. The invention must be useful ; this means that it must do what it purports to do.
5. Renewal fees must be paid from the fifth to the sixteenth year.
6. The use of the invention must not be contrary to law.
7. The patent must not be used in a manner constituting an abuse of monopoly.

Ingenuity and ideas insufficient. The invention must be something which is wanted and must be practical. It is not always the man who first thinks of the idea who receives the patent, but the man who acts first.

Simplicity not necessarily a bar. Simplicity, however, is no objection to an inventive step. The story of the egg of Columbus is an example showing that the most simple solution of a problem is often the most ingenious. The story is that when Columbus was at a banquet given in his honour in Spain, one of the party said to Columbus that even if he had

not discovered America, plenty of Spaniards would have been able to do so. Columbus passed a hard-boiled egg round and said : 'You try to make this egg stand on end as I can'. It was passed round but no one could make it stand on end. The egg was passed back to Columbus, who simply crushed the bottom of the egg and it stood on end.

Food and medicine. Previously food and medicine were not patentable ; that is to say, mere prescriptions for food or medicine are not considered to be inventions. The new Act, however, renders it possible to claim protection for a substance intended for food and medicine with certain reservations ; but, unlike other inventions, the Comptroller can grant compulsory licences without obtaining proof of failure to work the invention or proof of excessive prices, etc.

Process patents. During Mr. Hollins' Sheffield lecture in 1951, he was questioned as to the practical utility of patents relating to processes and admitted that, in very many instances, it would be extremely difficult for a patentee to prove that other people were utilizing his invention, in that the finished article would not necessarily disclose this. He pointed out, however, that particularly in large companies, there is always a possibility of a disgruntled employee giving information. He therefore thought that if the process were of any value, it was worth protecting.

Inventions based on existing patents. At the same meeting mentioned in the preceding paragraph, the Chairman asked what happened if someone made an important discovery which improved an existing patent ? The lecturer's reply was that the new inventor could apply to the Courts for a compulsory licence under the existing patent and that if he could prove his discovery to be useful, he would have no difficulty in getting such a compulsory licence, but in exchange might have to agree to give the original patentee a cross licence in the improvement. The same principle would apply even in the case of a patent on the secret list.

How is novelty affected by very old publications ? Patent specifications only affect the novelty of an invention if they are less than fifty years old. For example, if the invention is described in a book sixty years old, the patent will be invalid ; but if only described in a patent specification sixty years old, the patent may be valid.

Illegal or immoral inventions. Specifications are examined to see whether the invention is illegal or immoral. For instance, swivel headlights were prohibited during the war and therefore could not be patented. One cannot claim a patent for a gaming table or a machine for forging bank-notes, or for something which is against public morals.

STAGES IN A BRITISH PATENT

(a) *Provisional specifications.* Although one can file a complete specification at the outset, it is more usual to file a provisional specification which gives protection for twelve months, during which time the inventor has an opportunity of bringing the invention to perfection. With an additional fee, this period can be extended to fifteen months from the date of filing. Contrary to usual belief, a provisional specification is not

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examined by the Patent Office except to ensure that it has been signed and that the name, address and nationality of the applicant have been inserted. It is given a date and number and is then put away until the next step has been taken by the applicant. The Patent Office is under an obligation *not to divulge its contents* to anyone in the meantime, apart from listing the title, applicant and number in the weekly *Patents Journal*. The provisional specification contains no formal claims.

(b) *Complete specification.* Besides fully and adequately describing the invention, including the best method known to the inventor of operating it, this must end with a claim or claims defining very precisely the scope of the exclusive rights he desires to claim.

After filing the complete specification, a Patent Office Examiner makes a search to ascertain whether the invention claimed is novel. He goes back through fifty years of prior British patent specifications besides consulting foreign specifications and literature of all kinds. If he considers that there is full or partial anticipation, the applicant is given an opportunity to argue the matter or to amend his specification and claims.

The acceptance of an application is advertised in the *Patents Journal* after notice to the applicant and the *Journal* contains a note of the date when the specification will be open to public inspection. Copies of printed specifications can be consulted in any of the twenty-one repository libraries mentioned in each weekly issue of the *Journal*, or can be purchased from the Patent Office direct at a cost of 2s. 8d. each.

(c) *Opposition to the granting of a patent.* At any time within three months from the publication date, any person interested may give notice to the Comptroller of opposition to the grant of the patent on certain statutory grounds, such as :

1. that the applicant obtained the invention from the opponent ;
2. that the invention claimed is not new ;
3. that the invention claimed has been previously claimed in a complete specification, which, although unpublished before the date of the applicant's claim, bears a prior date ;
4. that the invention claimed is obvious, and in view of prior publication or knowledge clearly does not involve any inventive step ;
5. that the subject matter of any claim is not an 'invention'.

Incidentally, publication in a foreign journal is not considered to be anticipation unless it is actually received in this country.

(d) *Sealing.* Normally, the sealing fee must be paid not later than four months from the date of publication of the complete specification but this time can be extended by paying additional fees. Such extensions may be necessary if a U.S. patent is pending owing to the peculiarities of the law in that country.

(e) *Life of a British patent.* Although protection commences from the date of filing the provisional specification, the patent itself dates from the

date of filing the complete specification and runs for sixteen years from the latter, provided the necessary renewal fees to maintain the patent are paid.

An overseas applicant or his assignee can file an application under the provisions of the International Convention (to which fifty-two countries are adherents) ; in such case, the priority date is that of the application in the overseas country in question and is usually twelve months earlier than the British date.

On the other hand, British applicants have the right to apply in most foreign countries within twelve months from the original British application date and claim priority from the latter. According to a new provision in the 1949 Act, the filing of such foreign applications is prohibited, however, until after six weeks from the filing of the British application, unless written permission has been granted by the Comptroller.

(f) *Fees.* The cost of obtaining a patent bears no relationship to the official fees, but is usually determined by the extent of the services of the Patent Agent employed. The official fees for instance are :

£1 on application for the patent

£4 on filing of complete specification

£1 on sealing of patent

but my experience is that a simple patent involving a minimum of trouble costs at least £30 by the time it is sealed and may cost hundreds of pounds if the Examiner enters into an argument about novelty.

Renewal fees are a different matter, because the Patent Agent usually only adds one or two guineas to the official fees, which are as follows :

£5 for the fifth year (the first four years are covered by the initial fee),

£6 for the sixth year,

increasing by £1 for each year and finishing with £16 in the sixteenth year, thus making a total of official fees during the normal lifetime of a British patent of £132. It is not generally realized, however, that the new Patents Act empowers the Patent Office to charge higher fees, totalling £200 in all, but that these powers have not as yet been invoked.

I have heard people argue that it is unfair for British renewal fees to increase with the life of the patent. The opposite, however, is the case, because this principle lightens the burden of the struggling inventor or manufacturer when trying to introduce the invention and it also induces the patentee to drop the patent before the expiration of the full sixteen years if it is not valuable enough to justify the higher renewal fees.

The extent of these fees may be judged by the fact that in 1951 the income of the Patent Office was £927,444 compared with an expenditure of £778,760. Incidentally, it is interesting to note that in 1951 the Patent Office employed a staff of 939 (compared with 811 in 1938). It was still bigger in 1952 due to the efforts of the Aslib Patents Sub-committee, which has succeeded in obtaining additional staff for the Patent Office in order to speed up publication of abridgments and indexes.

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(g) *Tying clauses.* Tying clauses in relation to patented articles are illegal in Great Britain. For instance, it is not permitted to stipulate that the user of a patented machine should purchase certain materials exclusively from the manufacturer of the machine.

(h) *Working of patents.* A patented invention must be worked in Great Britain within three years from the date of sealing. If it is not worked and no acceptable excuse can be offered, any person may apply to the Comptroller for a compulsory licence on terms to be settled by him. A similar principle applies to many foreign countries, but not to the U.S.A. In some countries, 'nominal' working can be effected by means of a money payment, but this practice is beginning to be frowned upon and to be discarded.

(i) *Licences.* There are many advocates of compulsory licences. On the other hand, Meinhardt¹ is against a comprehensive system of compulsory licences applied indiscriminately to every patent, from the standpoint that it is contrary to the public interest, because it would lead :

1. to a decline in research and invention ;
2. to many inventions being worked secretly ;
3. to many inventors and manufacturers being deprived of their just reward ;
4. in many cases to the removal of the incentive to put inventions into practice.

The Chartered Institute of Patent Agents² takes a similar view to Meinhardt.

Meinhardt¹ humorously points out that to abolish patent monopoly by granting compulsory licences under every patent to all and sundry merely in order to prevent some patentees from abusing their monopoly rights, appears like Sam Weller's cure for squinting, namely : to cut off the sufferer's head.

About one half of the 232 countries granting patents provide for compulsory licences where the invention is not being adequately worked.

Another type of licence is termed 'Licence of Right'. A patentee can apply for his patent to be so endorsed, in return for which only half the normal renewal fees are payable. Any person is thereafter entitled to a licence under the endorsed patent on such terms as may be agreed with the patentee or, failing agreement, as may be settled by the Comptroller. 449 such endorsements were made in 1951.

(j) *Patents of addition.* I have already referred to this possibility when describing the principal changes introduced by the new Act. Such patents of addition only last as long as the original patent is in force.

Although the fees on application are the same as for an ordinary patent, no *renewal* fees are payable on a patent of addition.

In 1951, 649 patents were applied for out of a total of 35,513 applications, representing 2.1 per cent.

¹ P. Meinhardt. *Inventions, patents and monopoly* (2nd edition). Stevens.

² C.I.P.A. pamphlet *The British patent system*, p. 10.

(k) *Other means of protection.* If you merely wish to ensure that you cannot be mulcted into the payment of licence fees to other people later on and are not concerned with the collection of royalties or preventing other people from making the same article or using the same process, then you can obtain such protection without the trouble and expense of a patent, simply by publishing a full account in some technical magazine.

RIGHTS OF EMPLOYERS AND EMPLOYEES

Employers' rights. At Common Law, without any express contract, inventions made by a research worker or other employee engaged for the specific purpose of making inventions, improvements or new designs, are deemed to have been made in the course of employment and thus give the employer the rights to the invention and any patent covering it, without necessarily paying any additional remuneration to the inventor beyond his salary.

If there is an express contract between the employer and the employee, the provisions in this contract are also binding at Common Law. To take this to extremes, a chemist employed by a firm of artificial silk manufacturers had agreed to assign to his employer all his inventions in that field. The employee made an invention during his contract but kept it secret. He joined another firm and then filed an application for a patent. The Court decided that the employee held the invention in trust for his first employer and compelled him to assign it.

Employees' rights. The foregoing interpretation only applies to inventions connected with the business of the employer. If, however, an engineer in a munitions factory invents a new cigarette lighter during working hours using factory materials, he may be punished for the theft of the materials and for lost time, but at Common Law, the patent rights of the cigarette lighter will belong to him absolutely.

Many employers recognize the value of inventive ability in an employee in some tangible manner, as, for example, by promoting him or by giving him an augmented salary.

According to Robert F McKay,¹ operatives or others engaged in manipulative work are entitled to the exclusive ownership of their inventions, as an operative is not engaged to invent and so the employer has no claim on any inventions he may make, unless there is a contract to the contrary between employer and employee. Similarly, salesmen often have technical problems presented to them by their customers, but any invention made by a salesman, as with the operative, is exclusively his own property unless a contract of service exists containing a term to the contrary.

The Chartered Institute of Patent Agents has summarized the position in very similar terms.²

¹ *Mechanical World*, 15th December, 1950, p. 563.

² C.I.P.A. pamphlet *Inventors and employers*.

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The moral from the foregoing is that the rights of an employer in the inventions made by his employees are somewhat restricted unless the position is controlled by a contract of service and the employer may therefore consider it prudent in many cases to make such contracts. I may say that all the staff of the Research and Development Department of my Company have signed a patents agreement which clarifies the position as to ownership of patents.

John Lawes, writing in *The Chemical Age* (17th February, 1951, p. 277) under the title 'Trade secrets and the employer', goes even further by saying that there are limits to which an employee may make use of the knowledge gained in his former positions and that the employee is under a duty not to communicate information on these confidential matters to third persons. This duty therefore debars him from making the information available to a subsequent employer. Should advantage be taken of this knowledge, his former employer will be able to obtain an injunction preventing the information from being utilized. As regards technical specialists, John Lawes stated that their contract of service usually makes it a term that they will not, when this employment has ended, work for firms carrying on a business similar to that of their employer. Although such covenants are not looked upon with any great favour by the Courts, they are enforced if their scope is reasonable, i.e. so long as the restraint which they impose on the employee is no more than is reasonably necessary to protect his employer's legitimate business interests.

PROCEDURE RECOMMENDED TO INDUSTRIAL LIBRARIANS

British patent specifications. If the importance of the undertaking warrants it, the librarian should place a standing order with the Patent Office for copies of every British patent in his field. This can be done by selecting the group and class numbers corresponding to the subject matter in question and notifying the Patent Office accordingly.

Alternatively, the weekly *Patents Journal* should be carefully scrutinized and a selection made from the titles.

Yet another alternative is to pay a weekly visit to the nearest public library to examine patent specifications as they arrive. If such a repository library is within easy reach, this is possibly the most satisfactory method of all, as it is sometimes very difficult to judge the full scope of the subject matter merely from the title given in the *Patents Journal*.

Abstracts of patents. I strongly recommend the preparation of abstracts of the patents found to be of interest. We usually stencil these on foolscap sheets giving all the references, dates, etc., as well as a fairly full abstract and then circulate copies, not merely to a large number of key staff on a fixed circulation list, but also to particular individuals at all levels susceptible of being personally interested in the subject. This dissemination of information is expanded by the inclusion of a list of these selected patents in our internal Monthly Bulletin.

As most of you will be well aware, the Patent Office has recommended the publication of abridgments but these are usually several months later

than the patent specification and many of us cannot afford to wait so long. There is also a very heavy backlog still to be overcome due to the war.

Filing of specifications. Printed specifications are filed by us in numerical sequence for ready reference, but we subject-file copies of our abstracts. We have a special 'Patents' classification adapted to our own requirements. This saves us the trouble of subject indexing, as where a patent covers more than one subject interest it is a simple matter to insert spare copies of the duplicated abstract in each subject file. I commend this system strongly, as I have found it invaluable in the absence of up-to-date indexes published by the Patent Office.

Searches. There is no difficulty of course in tracing British patent specifications where the number is known.

As to subject searches, it is very unfortunate that the Second World War so badly dislocated the indexing and abridging of specifications by the Patent Office and it will be some considerable time yet before the arrears are all overtaken. However, thanks to the pressure brought to bear by the Aslib Patents Sub-Committee, progress is now being made. In the meantime, if a complete search of a subject is essential, it is necessary to go to, or to employ a Patent Agent to go to the Patent Office Library where a manuscript list is maintained in class order for patents granted since the outbreak of the last war.

Similarly, although published name indexes are very incomplete, name indexes on cards exist at the Patent Office for each 20,000 sequence of patents, thus rendering it possible to trace any British Patentee.

To overcome the drawback of visits to London, a strong plea has been made for microfilm copies of these indexes to be sent to each of the repository libraries in the provinces, but so far without success. Hence, if an industrial librarian in the provinces wishes to trace information about patents, the indexes for which have not yet been published, his only other alternative is to go laboriously through each weekly issue of the *Patents Journal*, a most time-consuming task indeed as you can well imagine. In our own case, we are in the fortunate position, so far as metallurgical patents are concerned, of having a complete set of our own abstracts, all of which are in classified subject files, thus enabling us to turn up any items of interest in a minimum of time. As, however, of recent years we have expanded our field to cover certain aspects of engineering, we are in a less happy position here and experience all the drawbacks mentioned above.

In the case of a subject search of patents in respect of which published indexes already exist, each abridgment volume contains a subject matter index with headings and sub-divisions in words and not by mere code; this, of course, considerably simplifies the task. In addition, there is a fifty years' consolidated subject index from 1861-1910 which can be exceedingly useful. Further, an annual subject matter index was published up to 1930 but has not been published since.

Where, however, the search relates to the war and post-war periods where indexes are not yet complete, the class number of the subject must first be ascertained from the abridgment class, classification and index

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key, thereafter examining the Patent Office class sheet bearing this number in order to obtain the list of patents belonging to this category. I want to warn you, however, that it is not an easy matter to find one's way in the classification key, as many of you will know from reading a paper given early last year by Mr. E. M. Bennett of H.M. Patent Office¹, in which he describes over a matter of some six pages how to trace all the possible classes under which one can find references to frying pans.

FOREIGN PATENTS

Accessibility of foreign patent specifications. If searches require to be extended to foreign patents, it may be useful to the provincial librarian to know where, in addition to the holdings of the Patent Office Library in London, foreign patents may be consulted. Appendix 1 contains details of the holdings of the repository libraries outside London. In addition, the International Patent Office at The Hague can be very helpful in the compilation of lists of patents (especially foreign) on specific subjects. For ready reference, Appendix 2 contains a list of the holdings of the Patent Office in London.

So far as German patents are concerned, neither London nor Leeds have a complete set of specifications issued since the outbreak of war. Batches of the missing issues keep being received and in the meantime the Patent Office in London has agreed on demand to furnish Leeds with a photo-copy of any German war-time patent specification in its possession. Appendix 3 contains details of London holdings of German patent specifications issued on or since 3rd September, 1939, relating to applications filed up to the time when the Reichspatentamt closed in 1945.

Foreign patent office procedure. For those who would like to study foreign Patent Office procedure, I would recommend a book entitled *A survey of the principal patent systems*, by Dr. Jan Vojacek, one of Europe's leading patent attorneys. This book not only contains detailed information on how the patent laws of the world are divided into five main groups and gives their characteristics, but it shows how the 140 separate patent territories of the world can be gradually merged, leading eventually to the formation of a uniform system of international patent protection with one patent classification throughout the world. This would be an immense boon to inventors and to technical progress in general.

For the benefit of anyone wishing to study this subject in greater detail than is possible now, I have listed in Appendix 4 the various publications which I have consulted in the preparation of this paper.

Following the presentation of this paper, a short film strip was displayed illustrating some of the many curious ideas for which patent protection has been obtained in the past. These are too voluminous to reproduce in full, but extracts from two of these are shown in Appendix 5.

¹ 'Searching classified patent specifications', E. M. Bennett, B.Sc., A.R.C.S. *Aslib Proceedings*, Vol. 4, No. 2, May, 1952, pp. 75-82.

APPENDIX 1

FOREIGN PATENTS : DETAILS OF PROVINCIAL HOLDINGS (WHERE KNOWN)

Australian patents

- BIRMINGHAM Patent specifications from 1904 (vol. 1) to date ;
Australian Official Journal of Patents (containing abridgments) from 1905 (vol. 1) to date.
- GLASGOW Patent specifications from 1904 to date ;
Australian Official Journal of Patents (containing abridgments) from 1907 to date.
- *LIVERPOOL
- MANCHESTER Patent specifications from 1904 to date ;
Australian Official Journal of Patents (containing abridgments) from 1904 to date.

Canadian patents

- BELFAST *The Canadian Patent Office Record* (containing abridgments) from 31st January, 1943 (vol. 71) to date.
- BIRMINGHAM *The Canadian Patent Office Record* (containing abridgments) from 1873 (vol. 1) to date.
- BOLTON *The Canadian Patent Office Record* (containing abridgments) for the past twenty years.
- BRISTOL *The Canadian Patent Office Record* (containing abridgments) from 1938 to date.
- GLASGOW *The Canadian Patent Office Record* (containing abridgments) from 1879 to date.
- HULL *The Canadian Patent Office Record* (containing abridgments) from January, 1940, to date.
- LEEDS *The Canadian Patent Office Record* (containing abridgments) from 1928 (vol. 56) to date.
- *LIVERPOOL *The Canadian Patent Office Record* (containing abridgments).
- MANCHESTER *The Canadian Patent Office Record* (containing abridgments) from 1873 (vol. 1) to date ;
 One volume of *Patents of Canada* containing brief descriptions of specifications from 1824 to 1849.
- NOTTINGHAM *The Canadian Patent Office Record* (containing abridgments) from February, 1947, to date.
- SHEFFIELD *The Canadian Patent Office Record* (containing abridgments) and register of copyrights and trade marks kept for the previous two years.

German patents

- GLASGOW *Patentblatt* from 1926 to 1939.
- LEEDS Pre-war patent specifications—80,974 (1896) to 678,143 (August, 1939).
 War-time „ „ —On request the Patent Office is prepared to supply a photo-copy of any German war-time patent specifications held in London for the use of the Library.

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Post-war patent specifications—800,001 to 851,000.

Name and subject indexes 1896-1937 ;

List of patent classes and groups ;

Subject indexes to patent classification ;

Numerical list of patents (and supplements) giving allocation into classes, sub-classes and groups from No. 1 up to the end of 1938. (Receipt of a similar weekly list recommenced with the first post-war consignment of patent specifications.) List of specifications (and supplements) arranged under classes and groups from No. 1 up to the end of 1938.

Irish (Eire) patents

- BELFAST Patent specifications from 1927 (vol. 1) to date ;
Official Journal of Industrial and Commercial Property
 (containing abridgments) from 1928 to date.
- BIRMINGHAM Patent specifications from vol. 1 (10,001) to date ;
Official Journal of Industrial and Commercial Property
 (containing abridgments) from 1928 (vol. 1) to date.
- GLASGOW Patent specifications from 1928 to date ;
Official Journal of Industrial and Commercial Property
 (containing abridgments) from 1928 to date.
- *LIVERPOOL
- MANCHESTER Patent specifications from 1928 to date ;
Official Journal of Industrial and Commercial Property
 (containing abridgments) from 1928 to date.

New Zealand patents

- BIRMINGHAM *New Zealand Patent Office Journal* (containing abridgments)
 from 1912 (vol. 1) to date.
- GLASGOW *New Zealand Patent Office Journal* (containing abridgments)
 from 1907 to 1939.
- *LIVERPOOL *New Zealand Patent Office Journal* (containing abridgments).
- MANCHESTER *New Zealand Patent Office Journal* (containing abridgments)
 from 1914 to date.

South African patents

- MANCHESTER *Official Journal of Patents, Trade Marks, Designs and Copyright* from 1948 to date. This gives a list of applications for patents, complete specifications accepted, trade marks registered, illustrations of trade mark applications, etc.

United States patents

- BIRMINGHAM Patent specifications for the last fifty years ;
U.S. Patent Office Official Gazette (containing abridgments)
 from 1872 (vol. 1) to date.
- GLASGOW Patent specifications from 1894 to date ;
 U.S. patent indexes 1893 to date ;
U.S. Patent Office Official Gazette (containing abridgments)
 from January, 1929, to 1950.
- LEEDS Patent specifications from 1893 to date ;
U.S. Patent Office Official Gazette (containing abridgments)
 from 1872 to date ;
 Name and subject indexes from 1872 to date.

- *LIVERPOOL Patent specifications ;
U.S. Patent Office Official Gazette (containing abridgments).
- MANCHESTER Patent specifications from 1893 (494, 115) to date ;
Indexes from 1872 to date ;
U.S. Patent Office Official Gazette (containing abridgments)
from 1880 to date.
- SHEFFIELD Patent specifications kept for seventeen years from date of
application ;
Plant (garden) patent specifications kept for seventeen
years from date of application ;
Index to patents, trade marks, etc., annually (with weekly
supplements) from 1928 to date.

* NOTE : Details of the extent of Liverpool holdings are not yet known as various consignments (to replace bomb damage) are still being received.

APPENDIX 2

FOREIGN PATENT SPECIFICATIONS : HOLDINGS BY THE PATENT OFFICE IN LONDON

(Extract from letter dated 2nd December, 1952, from the Patent Office)

Patent specifications

Specifications of patents for inventions have been, and are still regularly received from the following countries :

AUSTRALIA

AUSTRIA

BELGIUM (full specifications since 1949 only)

CANADA (full specifications since 1949 only)

• CZECHOSLOVAKIA (now irregularly)

• DENMARK

FRANCE

GERMANY

INDIA

IRISH REPUBLIC

ITALY

JAPAN

• NETHERLANDS

NORWAY

SWEDEN

SWITZERLAND

U.S.A.

Gaps and deficiencies have, of course, arisen due to the World Wars, but, on the whole, our collection may be said to be a very full representation of the specifications published in these countries.

DAVISON : FACTS CONCERNING PATENTS

Abridgments

List of Official Journals containing abridgments :

AUSTRALIA :	<i>The Australian Official Journal of Patents, Trade Marks and Designs.</i>
BELGIUM :	<i>Recueil des brevets d'invention.</i>
CANADA	<i>The Canadian Patent Office Record.</i>
FINLAND :	<i>Suomen Patenttilehti.</i>
GERMANY :	<i>Das Patentblatt</i> (abridgments to 1945 only).
INDIA :	Abridgments of specifications.
IRISH REPUBLIC :	<i>Official Journal of Commercial and Industrial Property.</i>
NEW ZEALAND :	<i>Patent Office Journal.</i>
NORWAY :	<i>Norsk Tidende for det Industrielle Retsvaern.</i>
POLAND :	<i>Wiadmosci patentowego.</i>
SPAIN :	<i>Boletin oficial de la Propriedad Industrial.</i>
SWEDEN :	<i>Svensk Tidskrift for Industriellt Rattsskydd.</i>
U.S.S.R. :	<i>Bulletin of the State Bureau for the Registration of Inventions</i> (to No. 12 of 1949 only).
U.S.A. :	<i>Official Gazette of the U.S. Patent Office.</i>

APPENDIX 3

GERMAN PATENT SPECIFICATIONS

Holdings by the Patent Office in London of German Patent Specifications issued on or since 3rd September, 1939

(Extract from letter dated 12th December, 1952, from the Patent Office)

- (a) The number of the last German patent specification issued before 3rd September, 1939, falls within the range of numbers 680,601-680,700.
- (b) The range of numbers 680,701-800,000 embraces specifications issued on and since 3rd September, 1939, and does not include specifications of patents in respect of which applications were filed after 1945, when the Reichspatentamt was closed.
- (c) 750,800 is the number of the last specification bound within this range and 767,316 the number of the latest specification falling within it and received in this library.

The number 800,000 was selected as an upper limit to the range in order to accommodate in the normal cumulative sequence of numbers, the issue (which continues) of specifications of patents granted in consequence of applications filed with the Reichspatentamt up to the time of its closing. The issue of such specification has been so irregular—especially between numbers 750,801 and 800,000—that it is difficult to give a brief picture of our deficiencies, the gaps being so many and varied in their extents.

Specifications numbered 800,001 and upwards are of patents applied for since the closing of the Reichspatentamt and granted, since its opening in 1950, by the new Deutsches Patentamt of the Bundesrepublik Deutschland.

APPENDIX 4

LIST OF PUBLICATIONS STUDIED IN THE COMPILATION OF THIS PAPER.
(The items marked with an asterisk are particularly recommended to
Industrial Librarians desirous of keeping abreast of this subject.)

<i>Author</i>	<i>Title</i>
ASLIB	<i>Report of Proceedings of the Fourth Conference.</i> Contents : Patent Classification in Great Britain " " " Germany " " " U.S.A.
BENNETT, E. M.	Searching Classified Patent Specifications (<i>Aslib Proceedings</i> , vol. 4, no. 2, May, 1952, pp. 75-82)
C.I.P.A.	<i>Inventors and employers.</i> (8 pages)
C.I.P.A.	<i>Patents Act, 1949. The Register of Patent Agents.</i> (36 pages)
C.I.P.A.	<i>The British patent system.</i> (10 pages)
C.I.P.A.	<i>The Patents Act, 1949.</i> With commentary by the C.I.P.A. (327 pages)
HADDON, R.	<i>A compendium of patents and designs law and practice</i> (Not fully up-to-date)
HENSON, R. D.	Some notes on Patent Law (U.S.A.). (From <i>A.S.M.E. Mechanical Engineering</i> , June, 1950, p. 472).
H.M.S.O.	<i>Abridgments of specification</i> (illustrated) 8-page list dated 1949 showing the arrangement of Classes and corresponding Group Volume No.)
H.M.S.O.	<i>Abridgment class, classification and index key</i>
H.M.S.O.	One-page leaflet explaining splitting of Groups IV and XL and Classes 2 (iii), 40 (iii) and 40 (v). (Changes in the Classification Key published in <i>The Official Journal (Patents)</i> 3rd October, 1951.)
*H.M.S.O.	<i>Development of Inventions Act, 1948</i> (8 pages)
*H.M.S.O.	<i>List of patents in force at the end of 1951</i> (148 pages)
*H.M.S.O.	<i>National Research Development Corporation</i> <i>Reports and Statement of Accounts</i> (Annually)
*H.M.S.O.	<i>The Official Journal (Patents)</i>
*H.M.S.O.	<i>Patents Act, 1949</i> (70 pages)
*H.M.S.O.	<i>Patents and Designs Act, 1949</i> (70 pages)
H.M.S.O.	<i>Patents, designs and trade marks.</i> Sixty-ninth Report of the Comptroller-General of Patents. Designs and Trade Marks, with Appendices, for the year 1951 (28 pages)
*H.M.S.O.	<i>Patents for inventions</i>
H.M.S.O.	<i>The Patent Rules 1949</i> (74 pages)
H.M.S.O.	Royal Commission on Awards to Inventors. <i>First Report.</i> C.M.D. 7586 (21 pages).
H.M.S.O.	Royal Commission on Awards to Inventors. <i>Second Report.</i> C.M.D. 7832 (10 pages)
HOAR, R. S.	<i>Patent tactics and law.</i> (U.S.) 315 pages
*HOLLINS, C.	<i>Introduction to the patenting of inventions</i> (99 pages)

DAVISON : FACTS CONCERNING PATENTS

- Industrial Chemist* Research and patent rights.
The position of employer and employee. (From *The Industrial Chemist*, February, 1938, pp. 57 and 58)
- KEMPE, JOHN First Official Patent granted by King Edward III to John Kempe, a Flemish weaver, in 1331
- KINGS PATENT AGENCY LIMITED *Notes on patents*. 21st Edition. (16 pages)
- LAWES, JOHN Trade secrets and the employer
Published in *The Chemical Age*, 17th February, 1951, p. 277
- *LOCHNER, R. *The new Patents Act* (27 pages)
- *MATHYS, H. R. Patents as a source of information
(*Aslib Proceedings*, vol. 4, no. 2, May, 1952, pp. 69-74)
- McKAY, ROBERT F. The inventor and the employer
(The rights of inventors in industrial organizations)
From *The Mechanical World*, 15th December, 1950, pp. 563-4.
- *MEINHARDT, P. *Inventions, patents and monopoly*. Second Edition. (320 pages)
- MONOPOLIES Copy of Section 6 which still forms the basis of
STATUTE OF (1624) Patent Law
- MOULTON, H. The new patent law. (From *The Times Review of Industry*, April, 1950, pp. 6 and 7)
- FLETCHER
- SEIDEL, A. H., and Inventions and patents. (Discussing in particular
BONNER, Z. D. tests by which patentability can be judged and the regulations which control the granting of American patents.) (*Petroleum Refiner* vol. 29, no. 6, June, 1950, pp. 99-102 ; *Petroleum Refiner*, vol. 29, no. 7, July, 1950, pp. 115-118)
- SUGDEN, A. *The patents system*
(BOOTS' CHEMISTS) Patents and Licences of Right (7 pages)
- U.S. PATENT OFFICE *General information concerning patents*.
- U.S. PATENT OFFICE *Manual of classification*
- U.S. PATENT OFFICE *Patent laws*
Revised 1st May, 1947 (59 pages)
- VOJACEK, DR. JAN Book entitled *A survey of the principal patent systems*.
(Can be borrowed from the National Central Library)
- *WHITE, T. A. B. *Patents for inventions and the registration of industrial designs* (389 pages)
- WHITE, W. W., and *Patents throughout the world*, 1948 onwards (looseleaf
RAVENS CROFT, E. G. book). (Copy available in the Sheffield City Libraries)
- WILDBORE, J. W. H. *Advice to inventors and other applicants for patents*
(11 pages)
- WILD, J. E. *Patents. A brief guide to the patents collection in the Technical Library* (Manchester Public Library).
(8 pages)

APPENDIX 5

Abstracts from film strip displayed during the presentation of the paper
by Geo. H. Davison.

British Patent Specification No. 2115 of 19th July, 1867, by J. W. Butler and E. Edwards for the invention of 'Improvements in Apparatus for floating in and travelling through the Air'. (Fig. A.)

It will be seen from the following extract that this specification covered a jet propelled aeroplane. However, as the patent was over fifty years old it could not be cited against the Whittle jet propulsion patents.

'Or as another means of propulsion we use the reaction of a jet or jets of compressed air or gas, steam, or other suitable fluid, or of the explosion of a mixture of inflammable gas and air, or of other explosive material, the jet or jets being turned in a direction contrary to that in which the apparatus moves, so that by the reaction the latter may be driven or propelled rapidly forward ; and sometimes we use two such jets on each side of the apparatus, and by regulating the force of such jets relatively we are able to guide or direct the course of the apparatus ; or sometimes for the same purpose we make the jets or tubes themselves movable, so that by altering the direction in which the jets issue we can alter the course or direction of the apparatus ; sometimes we make such jets of steam, air, gas or other fluid intermittent, so that the apparatus having been impelled forward with considerable force the jets may then cease, and the apparatus will float forward horizontally for a considerable distance by the momentum which it has retained, and when this is nearly exhausted a renewal of the jets will again carry it forward and give it fresh momentum, and so on continually, thus imitating the flight of some birds which float through the air on expanded wings, a few strokes of which occasionally made are sufficient to renew the momentum when necessary, and in this way the power may be more conveniently used.'

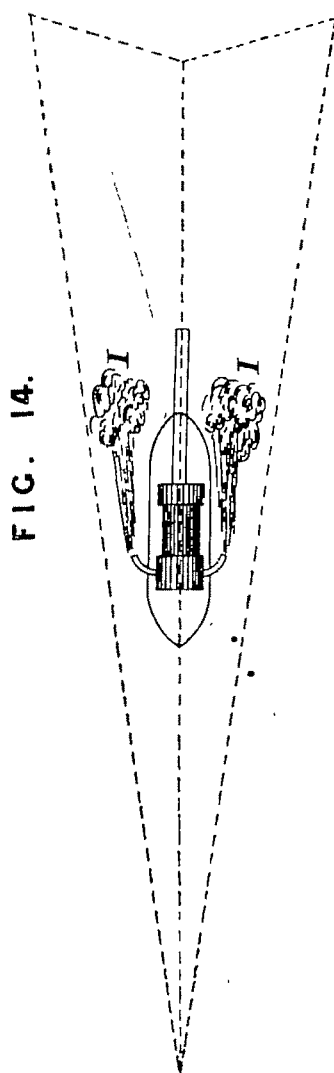
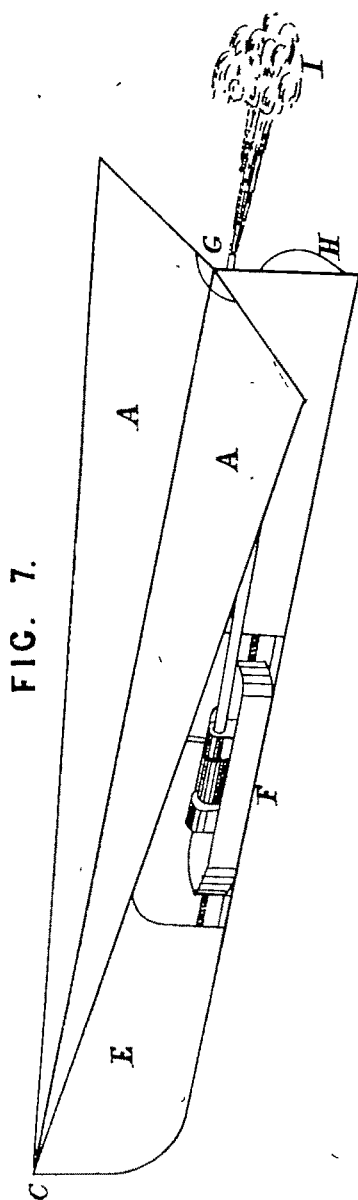


Fig. A. Diagrams from British Patent Specification No. 2115.

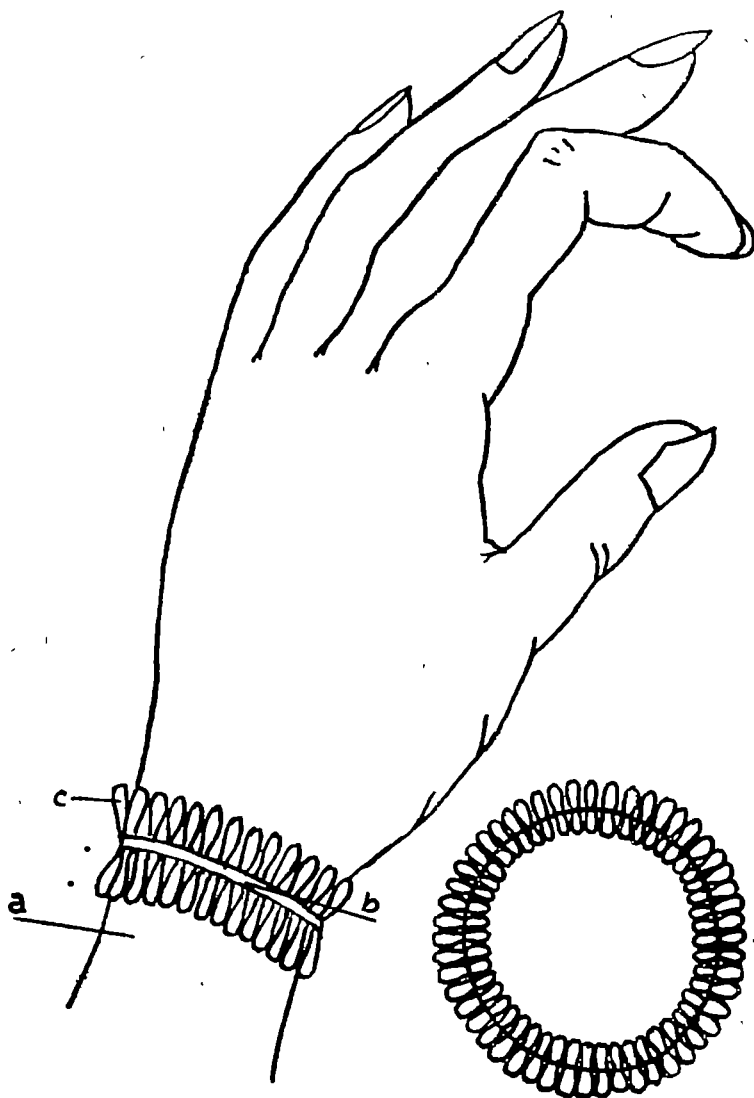


Fig. B. Illustration from British Patent Specification No. 393,673

British Patent Specification No. 393,673 of 1931 by Edgar Honig.

The patentee claimed protection for a device for intercepting moisture running down the hands and wrists when eating crayfish. It consists of a ring tightly surrounding the wrist and composed of material such as paper, fabric, or rubber sponge which absorbs the moisture.

THE WRITING OF ENGLISH IN ABSTRACTS AND REPORTS

BY ERIC N. SIMONS

Information Officer and Publicity Manager, Edgar Allen & Co., Ltd.

Glasgow, 27th February, 1953

EVERY man has his King Charles's head, and the writing of English is mine. Some people imagine that you cannot write, or write about, good English unless you have a long list of impressive letters after your name. I have none at all, and for that very reason I am something of an authority on the subject. You see, I have never been able to assume that, having passed examinations in it, I've got rid of English once and for all and need no longer take an interest in it or give it my attention. When I read some of the slovenly English written to-day, and observe the academic qualifications of the folk who write it, I feel glad I have no degree in the subject. My qualification for talking about English is the simple one that for nearly forty years I have earned my living and a little literary distinction by writing it, and have never stopped studying its complexities.

Now when people pay a man quite appreciable sums of money for his writings, they expect certain things from him ; precisely the same things are expected from people who write abstracts and reports. First of all, men expect clarity. In other words, they want to be able to understand what they read. If an editor doesn't understand what you have written, he not unnaturally concludes : first, that his readers won't understand it ; and secondly, that you don't understand it yourself.

Secondly, a professional writer has to be concise. I tell the young men who come to me for hints on how to break into the literary market that editors pay you not for what you put in, but for what you leave out. It's been said over and over again, but no one takes any notice, that you should never write two words if one will do. There are, in the artistic world, exceptions to this rule ; but in the world of abstracts and reports there are none. In writing good *literary* prose you may have to introduce two words rather than one for the sake of euphony, when the single word has a harsh sound in conjunction with those before and after it ; but in writing abstracts and reports, your object is to economize the reader's time, and you should therefore cut out the superfluous words however much you dislike doing so.

The first superfluity you should throw away is what professional writers call 'the starting rail'. In the early days of aviation, there were aeroplanes that could be started only by means of a set of rails. Hence the term 'starting rail'. The starting rail in writing is the opening sentence, the thing that gets the author going. You'll recognize it at once, if I quote a few examples. 'It is, of course, essential that maximum productivity should be achieved in Britain.' This is the first sentence of a report on motion-study in a steel works. The next sentence runs : 'A series of intensive studies was carried out of the working movements of

a welder, with the result . . . ' and so on. Would it not have been far better if the starting rail had been omitted, and the author had made his second sentence the first ?

Here's another ! 'It has been evident for some time that a high rate of accidents in factories has a deleterious effect upon labour recruitment.' Then the writer goes on to talk about a safety device for preventing accidents caused by falling furnace doors. How much better if he had cut out that windy, pompous starting rail.

But don't let us overlook that for the writer the starting rail serves a useful purpose. It gets him going, sets his pen moving. He may have six starting rails if he likes, but he must not forget to go through his manuscript afterwards, and cut them out.

Of course, I'd much rather talk to you this afternoon about literary English ; but that isn't what you've come to hear ; so I'll stick to my last, and give you the cobbler's song about abstracts and reports, many of which are shockingly written. In a paper, which has since been printed in *Aslib Proceedings*, I gave the Birmingham branch some indication of slovenly abstracting practices, so I shall not repeat what I said there. If you have the time and energy, you can look it up for yourselves. This afternoon I want to concentrate on some of the commoner errors of English found in both types of writing.

First, let us take that all-too-common illiteracy : 'due to', as if it had exactly the same meaning as 'owing to'. An example : 'Some articles have increased in price, due to the increasing demand.' 'Due' means payable, it implies debt. Ask yourself the question : What, here, is due ? Not the articles, as the sentence would lead you to suppose. 'Due to' is not, like 'owing to', a compound preposition, which can be used either as adjective or adverb ; it *must* be attached to a noun. It can't be attached to an idea. I'm not claiming any originality for this discovery. It's been pointed out by all the authorities on modern English, from Fowler and Herbert onwards. A sum of money may be due to a man, but a decline in price is not due to increasing demand. Besides, the expression is not essential. You can always say 'owing to', 'caused by', 'as a result of', 'because of' or 'through'.

Then there's that ever-recurring grammatical blunder, the fused participle. I will wager that not a day passes but brings a score of examples of this error in every type of published writing, from the novel to the newspaper. What *is* the fused participle ? Let me show you ! Here's an example : 'Workmen being on production councils reduces the authority of management.' Here's another : 'I dislike you stating your grievances in that tone.' These are quite simple examples. There are more complicated ones that you can discover later for yourselves. What's wrong with these sentences ? Take the first ! What the writer is trying to say, when he writes : 'Workmen being on production councils reduces the authority of management' is that the presence of workmen on production councils reduces the authority of management. Why doesn't he say so ? Anyone who knows elementary grammar will appreciate that what he *has* written can't be analysed. If he had written 'Workmen's being on production

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councils' he would have satisfied grammar if not euphony ; but the construction he *has* used is grammatically indefensible.

Here's a third example. 'It is no longer scientific to deny the possibility of something being invented to solve the problem.' Here, what the writer has said in effect is that it is no longer scientific to deny that perhaps something is actually being invented *at this moment* to solve the problem. This isn't what he means at all. What he truly means is that perhaps something *may be* invented *in the future*.

What should he have written ? Obviously, 'It is no longer scientific to deny that something may be invented to solve the problem'. Or, if he doesn't want to use that construction, he can say 'to deny the possibility of something's being invented to solve the problem'. The point I want to make is that you can always avoid a fused participle by rewriting your sentence.

Then there's another most common blunder, of which I give a few easy examples. 'Being about to set off for the market, the wind howled round her skirts.' 'Leaking at every joint, the plumber soon put things to rights.' Or as one report writer wrote : 'Working within the narrow confines of a research laboratory, the problem of biological survival seems too vast for contemplation.' Or yet another: 'Hanging by a thread, I saw the curtain sway.' I call this grammatical error 'telescoping of the subject'. I daresay it has a more accurate name, but this does for me. What is wrong with these sentences is that the writer has tried to make one sentence take two subjects, which it can't do. In the above example, it isn't the problem that is working in the narrow confines. It is the research worker. The sentence should have been : 'To the research worker, working in the narrow confines of a research laboratory, the problem' and so on. In the preceding example, it isn't the plumber who's leaking at every joint, but the pipe. The sentence should have read : 'Though the pipe was leaking at every joint . . .'. In the final, more obvious, example, it isn't the 'I' of the sentence who is 'hanging by a thread', but the curtain, so the sentence should have read : 'I saw the curtain, which was hanging by a thread, sway', or better, because smoother, 'The curtain was hanging by a thread ; I saw it sway'.

Let's turn now to something that also bears on clarity and concision. This is the use of long-winded words and constructions. I'm not going to dwell on these. I'll give you a few of the commoner examples. Thus, 'prior to' for 'before' ; 'subsequently' instead of 'later' or 'afterwards' ; 'proposition' for 'idea' or 'scheme' ; 'mentality' for 'mind' ; 'meticulous' for 'precise' or 'exact' ; 'percentage' for 'part', as in the sentence : 'This is only a percentage of our requirements'. 'As to whether' for 'whether' ; 'if and when' for either 'if' or 'when' ; 'post-prandial' for 'after dinner' ; 'by means of' when 'by' would be more correct.

We must now come back to the general considerations to be borne in mind when preparing reports. We have mentioned clarity and brevity ; the next requirement is logical arrangement. We are all familiar with the report that starts with Sirius, ends with soap, and digresses to bring in suet pudding and horse chestnuts. Reports and abstracts should have

a beginning, a middle and an end, the one following from the other without awkward gaps, leaps, divergencies, or what can only be described as a confused floundering towards a dimly-apprehended objective. The men who read reports have usually little time to spare. While, therefore, the report-writer's views on the length of toenails in the young and the reasons why he became interested in toenails may be exquisitely enchanting to himself, his friends and relations, he should, if his report is supposed to be about brass tacks, stick to them.

I quote now from an actual report, compiled by an undergraduate.

'The data of this report is concerned with periodical literature of interest to welders ; it is discussed as to authority, usefulness and scope. From this data, the worth of each magazine will be estimated. Due to the variance in subject matter of interest to welders this is not easy to do. If the range of interest wasn't so large you could classify the contents much better and compare the magazine easier. Nobody can hardly imagine the possibility of any welding engineer reading all of those in one special field. To those engineers who are most interested in the heavy industries there is *Engineer* and *Iron and Coal Trades Review*. An engineer cannot help but gain information if he reads these two magazines. Likewise, each of the other magazines examined are valuable in their own way.'

I need not tell you that quite apart from the solecisms, barbarisms and ungrammatical expressions with which this genuine report abounds, it is badly paragraphed throughout, weak in the construction of its sentences, and utterly incapable of holding the attention of a reasonably intelligent, busy man.

Some people argue that you can't write good, clear English unless you've had a classical education. I haven't, although because I like studying languages I learned Latin up to matriculation standard thirty years ago and have even, for fun, translated Latin verses into English verses. It amuses me immensely, therefore, to see men who have had a classical education writing 'this data', 'this agenda', 'these opuses', and other monstrous errors. A first-rate Latin scholar sent me once for criticism a manuscript containing the expression : 'David and his *little* host'. I ask you ! These are often the men who 'donate' rather than 'give' ; 'loan' a book when they mean 'lend' ; and slip in Latin tags they obviously don't understand themselves, since they use them incorrectly.

But this does not mean that a classical education is valueless in learning to write English. It can be valuable, particularly in helping you to decide the meaning of a word. The danger is that your Latin scholar may become too Latinized in his style. It still remains true that seven times out of ten the long, stilted word for a thing is the word with a Latin root. The Anglo-Saxon expression is nearly always shorter, better and more concrete. In fact the concrete word should always be used rather than the abstract. Those who adopt long words unnecessarily are usually those, inexperienced in writing, who have neither a natural ear for language nor

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good taste. The weak and clumsy writer always goes for the pompous word, which he wrongly imagines to be the more dignified ; he chooses the limp, weak word because he can't be bothered to find a better ; and he pours out masses of verbiage in the belief that mass is equivalent to power.

Here are some examples. A man writes 'commodious residence' when he means 'roomy house' ; 'I cannot accommodate' for 'I can't find room for' ; 'the comestibles were delectable' when he means 'the food was good'. Such a man never 'buys', he 'purchases' ; he doesn't use 'gum' but 'mucilage' ; his pictures never 'hang' they 'depend' ; he doesn't 'read' he 'peruses' ; he never 'tells' he 'informs' ; he doesn't eat 'jam' but only 'preserves' ; his soldiers are 'valiant' never 'brave' ; nobody 'pays' him, he gets 'emoluments' ; and so on and so forth, *ad libitum*, *ad nauseam* and *ad captandam*.

I put in those Latin tags to show you how easy it is to drag in Latin expressions that are not really necessary or relevant. Some writers of reports and abstracts cannot let a paragraph go by without sticking in *op. cit.*, *ibid.*, *ad hoc* ; *videlicet* ; *ad hominem* ; *ad referendum* ; *a priori* ; *a posteriori* ; *id. est* ; *aetate* ; *tot homines* ; and all the array of dismal, degraded, doddering, decayed and disgraceful Latin clichés dug out of some old prep. book they once had in the upper fourth.

I want to talk next about another important subject, punctuation. It is quite impossible in a brief paper such as this to go into the niceties of punctuation. When I was on the Committee of the English Association in Sheffield, we spent hours in merely deciding where and when to use hyphens. All I'm going to say here is this. When you punctuate a sentence, you are trying to reconcile two almost irreconcilable things. Punctuation, you see, serves two quite distinct and different purposes : a grammatical purpose, to show you how the parts of the sentence are related to each other ; and a vocal purpose, to break the sentence up into lengths suitable for reading or speaking aloud, or for mental hearing. Consequently, if you punctuate rigidly according to grammar, the reader of the sentence finds it is too staccato, too often interrupted by pauses and breaks. On the other hand, if you put in punctuation marks only where you would normally pause to take breath in speaking, the reader may be confused and misled.

The only solution is, as always in England, to compromise. You have to use no more punctuation marks than will suffice to show the logical structure of the sentence ; but as many as will give you easy reading aloud. Many experienced authors who also write speeches for broadcasting or the lecture hall have developed a special technique. They word their paragraphs differently for speaking than they would for print. Thus, in broadcasting, they would probably write : 'Young John Smith, fresh from holidaying in France, and with a week of leisure still before him, delightful thought I, was compelled to admire the almost purple blue of the sky.' In print, this might become : 'The sky, a luminous blue, shading to purple, aroused the admiration of a young man, John Smith, who, having only that day returned from France, was now looking

forward, with an eagerness that will be imagined, to a week of leisure still to come, the prospect of which enhanced the delight he already felt.'

In those two sentences I am not so much comparing or contrasting styles, as showing how many more words and punctuation marks there are in the one paragraph than in the other, yet how necessary these words and marks are to the two different methods or techniques.

Of course, in writing reports, these niceties of punctuation and style are less important, because few reports have to be read aloud; nevertheless, technical papers have sometimes to be delivered verbally, and it is then that the conflict between the eye and the ear affects punctuation. In general, the safe rule is to be sparing with commas rather than too liberal. Some manuscripts look as if they had had the pepper pot sprinkled over them. Don't be afraid to mark a slightly longer pause by a semi-colon, and a longer pause still by a colon. The dash is so common to-day that one hesitates to criticize it: I use it a good deal myself: but it remains true that it can nearly always be replaced without loss by a colon. And from the point of view of printing and paper, the colon occupies much less space.

There's one final matter on which I must speak; the presentation of the report. As an editor, I receive every week manuscripts and reports that betray the maximum ignorance of this matter. They come to me, even when typed, in a most objectionable condition. Some are tightly rolled up, so that I have to put them under a 500-ton hydraulic press to make them flat enough to read. Sometimes they are typed single space, so that by the time I've edited them, the manuscript is illegible, and has to be typed all over again by my over-worked and harassed secretary. Often they have no margin at the left-hand side, so that if I wish to give the printer instructions, I have to dictate a letter or write on a separate sheet of paper, with all the risks that these practices involve.

Again, they are often typed or written on both sides of the paper, so that the printer cannot deal with them, and at least every other page has therefore to be retyped. Then come the illustrations; these are often not labelled, so that the poor editor is left to guess which is which and what they represent. As the author is usually in Timbuctoo or Tibet when the proofs are ready, a chance has to be taken, and then it always happens that there is a block upside down or out of place. The author is invariably furious. . . .

I know this hasn't really anything to do with the *writing* of English, but it's relevant nevertheless, because the finest English in the world will only annoy and perplex if it isn't properly presented. So when submitting a report, either to your chief or to a journal, always see that it is typed on good, clean quarto-sized paper, with double-spacing; at least an inch and a half of margin on the left-hand side; and every illustration captioned or labelled and numbered, the numbers corresponding to the figure numbers in the text. Never type on both sides of the paper! Give your report the heading you want to see in print, but for pete's sake, make it snappy! Anything is better than 'A Brief Report on the Incidence of Accidents as a Result of Ignorance and the Lack of

SIMONS : THE WRITING OF ENGLISH

Intervention of Providence in Alberta during the month of December, 1953'. This is merely pompous. The heading should be brief and bright. The sub-headings can amplify.

Well, Mr. Chairman, there may be two schools of thought represented at this gathering. There may be the school of fanatical pedants, who will resent my freedoms of expression, my rejection of their pet beliefs, my onslaught on what George Gissing once referred to in another connection as 'windy insufficiencies'. There may also be representatives of the 'it's near enough' school. This school says : 'Well, as long as they know what you mean, what does it matter?' The trouble, Ladies and Gentlemen, is that they *don't* know what you mean when you use the wrong words and write English incorrectly. They only think they know. English is an instrument of precision and that's why the Scots are, on the whole, good at it. A blunted tool is a bad tool, and a man who uses slipshod expressions because in his view 'it doesn't matter' is deliberately turning out bad work.

I daresay some bright person, if ever this paper reaches the dignified pages of *Aslib Proceedings*, will work diligently over it to see if Homer himself has nodded. Well, I will tell him now that Homer does nod—often—usually when he's trying to send 2,000 words by return of post, which is the sort of thing editors occasionally ask of him ; but Homer rarely nods when he has time to think, and he never nods deliberately.

THE USE OF CONTINUOUS-FORM STATIONERY FOR LIBRARY LOAN RECORDS

BY MARGARET D. GAUNTLETT, B.Sc., A.L.A.

Kodak Research Library

FOR the past five years loans from the Kodak Research Library have been recorded on continuous-form stationery, the use of which has become an accepted part of the library routine. During this time visiting librarians have often shown an interest in the equipment and a number of other special libraries have adopted it. Some account of our experience may therefore be of wider interest.

Many special libraries make their loan records in duplicate or triplicate and use for this purpose either two or three forms clipped together with interleaved carbons or folded carbon-backed forms. The first of these methods was used in the Kodak Research Library and the preparation of daily supplies of triplicate forms was found to be a time-consuming task for the loans assistant. We therefore considered the making of records on forms printed on a continuous band of perforated paper.

One type of form produced for commercial use seemed promising. It is supplied in flat packs of interfolded forms, each pack containing up to five sets in different colours, according to the number of carbon copies required at one writing. The forms, normally used for orders, requisitions, receipts, etc., are obtainable in several sizes, the smallest of which is 6 to $6\frac{1}{2}$ inches long and 4 to $4\frac{1}{4}$ inches wide. The pack is loaded into a 'register' in which successive forms are guided between fixed sheets of carbon paper into position under a window exposing a single form.

The register may be a large desk model holding both the pack and the completed forms or a small portable model in which the paper is ejected and the forms torn off as required. This portable type seemed suitable for our purpose. At the time (1948) there was only one on the market. This measured $8 \times 5 \times 1\frac{1}{2}$ inches and held fifty sets of $4\frac{5}{8} \times 6$ -inch forms in duplicate or triplicate. This form size is convenient in that, if two loan forms are printed on each, the $4\frac{5}{8} \times 3$ -inch half-size forms can be filed in ordinary catalogue drawers. It was necessary for the manufacturers to print the required wording for us and also to make double the usual number of perforations. The fixed carbons do not extend to the full height of the $4\frac{5}{8} \times 6$ -inch form, since the top normally carries a manufacturer's letter heading. Therefore, the top half of the window had to be covered so that writing was always carried out on the form in the lower position.

From 1948 to 1951 we used 200 packs, i.e. 20,000 loan forms, for recording an average of thirty loans a day. This first register proved generally satisfactory but had two minor disadvantages in the special circumstances of a library where the borrowers themselves fill in loan forms. Firstly, the sets of forms were merely pulled on by hand and had a tendency to get out of register when pulled by a careless borrower. Secondly, the

carbon papers, which were in the form of small sheets held on pins at the bottom of the register, sometimes tore away from the pins owing to the friction between them and the band of paper.

By 1951 there were available other portable registers of slightly different design, but most of them suitable for our type of work. We selected W. H. Smith's 'Alacra' in which the paper is moved by a sprocket wheel which engages with holes along the margin and thereby ensures correct register. Supply rolls of carbon paper are held at the side of the 'window' and carbons are pulled across at right-angles to the direction of the paper movement when a new surface is required. The loan card size is $4\frac{1}{2} \times 3\frac{1}{4}$ inches.

With both makes of register the forms were supplied in triplicate sets of white, pink and yellow. The register is kept on a small sloping platform on the assistant's desk and borrowers themselves complete the loan forms and eject them from the top of the register. At intervals during the day the assistant removes the continuous band of completed forms and accumulates them for the following day's filing.

The white, pink and yellow forms are filed by author, date and borrower's name respectively. The method of recalling overdue loans within the organization is more economical of staff time than the usual method of written reminders. A pink form corresponding to an overdue loan is sent through the works' post in an envelope bearing a duplicated request to return the overdue material, or, if a renewal is required, to return the form in the same envelope. The borrower normally responds within a few days and the envelopes, which are not sealed, are used repeatedly, until the space for writing names is completely filled up. Few borrowers fail to respond to such reminders but in order to keep a check on these few a coloured paper clip is attached to a yellow slip as the corresponding pink slip is despatched. The colour is changed weekly and a visual picture of overdue loans is thus presented. The few unresponsive borrowers are reminded by special letter, telephone, etc.

Several years' use of continuous stationery has convinced us of its convenience for loan records. The main drawback to its adoption by the small special library is the cost. Neither the register nor the individual packs are costly, but each manufacturer stipulates the ordering of a minimum quantity of forms, usually 10,000 or 20,000, i.e. 20,000 or 40,000 half-size loan forms. Only by insisting on such a minimum can we quote a reasonable price to cover paper and printing. We have recently purchased a minimum stock of 40,000 loan forms which will last some six years and which cost in 1951 about £70. It is understandable, however, that many special libraries would hesitate to commit themselves to an untried system for many years ahead and to put a large expenditure on a single year's budget. One Aslib member has already suggested that a possible solution would be for a manufacturer to print a large quantity of standard loan forms which could be held in stock and sold to libraries in small quantities as required. Unless this could be done, the method is probably only of use to a library with a large enough loan service to justify the outlay required.

A SCHEME FOR CIRCULATING PERIODICALS

By E. H. MURCH, M.Sc., A.I.R.C.

Librarian, Chemical Research Laboratory, Teddington

and C. E. C. HEWETSON

THE scheme about to be described handles the circulation of 200-300 periodical titles to 100 readers, most of whom are housed in one building.

The basic documents in use are as follows :

1. A normal Kardex type register to record receipt of periodicals.
2. An annual, duplicated, list of periodical titles which is circulated to all readers. On this list each title is given an identifying number.
3. A reader's record card showing the periodicals he wishes to see (this part completed annually by the reader), and the order in which these are circulated to the reader (this part completed annually by the library staff).
4. A card for each periodical title, bearing its identifying number and a list of readers, against each of which is indicated the stage of circulation at which the periodical in question is received.
5. A circulation sheet for each reader covering six months' circulation.
6. A manilla portfolio for each reader to which is attached the circulation sheet (5 above).

Items 3, 4 and 5 are illustrated in Appendix A.

The receipt of all periodicals regularly taken is recorded on the Kardex type register (1). Against each title in this record is shown an identifying number which is written on the cover of each issue of the periodical when received. In the event of two copies of a periodical being received, they are given the same number with the addition of letters X and Y to differentiate the copies. This could be extended to cover a greater number of copies than two, if necessary. In the event of a periodical already numbered being issued later in the year in two parts, the numbers 1 and 2 are added to its original number, thus providing each part with a separate number (e.g. 1371 and 1372 in columns H and D of item 3, Appendix A). Additionally, a letter may be quoted to indicate the stage at which the periodical enters circulation (*q.v.*).

The annual list (2) is sent to all readers with a card ruled as Item 3 (Appendix A). As sent out, the first four columns and columns A-H are

headed but otherwise left blank. The reader completes the first four columns, after consulting the list (2), and returns the card to the library.

For circulation purposes the month is divided into eight half-weekly periods lettered A-H, and each title is circulated to one reader during one of these three-day periods. Any particular periodical, say No. 4, is taken as the starting point in organizing the year's circulation. All cards on which this appears (first column of columns 1-4, Item 3) are extracted and arranged in priority of interest in periodical No. 4. The card of the person with highest priority is marked 4, in column A, the next is marked 4 in column B and so on until all those requesting to see this periodical have been dealt with. A reader's priority should be modified in some instances to balance his reading loads in the eight periods. For the same purpose and also to relieve congestion in the display rack, a periodical may go into circulation in any of the periods A-H. Once this period has been determined it is entered against the number on the receipt register so that it is noted on the cover of the periodical with its number when received in the library. If there are more than eight readers, the circulation cycle is repeated, as necessary. To indicate the supply of any periodical in, for example, the second cycle, '(2)' is placed after the relevant periodical number in the appropriate column A-H of the reader's card (see 572 (2) in column A and 44 (2) in column C, Item 3, Appendix A). Further bracketed numbers can be added to indicate third, fourth, fifth, etc., cycles as required.

As each periodical is dealt with, an additional card (Item 4, Appendix A) is made out bearing the number of the periodical at the top. Listed on the body of the card are the names of all readers and the periods during which the periodical is circulated to them.

Thus there is a file of cards arranged by readers' names, showing under each period of circulation the periodicals received, and a file of cards arranged by periodical numbers showing the names of all readers and the periods when they hold the periodical in question.

From the reader's cards, circulation sheets (Item 5) are prepared. Each sheet bears the reader's name at the top and is divided into six horizontal columns, one for each of the six months in the half-year, and eight vertical columns, one for each of the circulation periods A-H. For each horizontal (monthly) column the data appearing on the readers' card (Item 3) in columns A-H is transcribed to the circulation sheet. It will be seen that this data is repeated for each month. Below each monthly A-H column a space is provided in which the date for return can be stamped. These sheets are pasted on the outside of strong manilla portfolios (Item 6). The periodicals are placed in each portfolio for circulation to each reader.

The mechanism of circulation is as follows. It will be assumed that the period A of January is about to commence. All periodicals marked A are taken from the display rack and placed in numerical order on a table with periodicals from other cycles on other tables. Any one of the portfolios is taken and filled with the periodicals indicated on the circulation sheet for January, Period A, e.g., 572 (2), 462, 6, 157 (4) and 74 (Item 5,

MURCH and HEWETSON : CIRCULATING PERIODICALS

Appendix A). Each portfolio is filled similarly. If any periodical on the circulation sheet is not available, its number is deleted for the period concerned. In this event, two issues will probably be available for circulation in the next month and will then be indicated by adding +1 to the periodical number in the relevant column of the circulation sheet. Should any periodical have been overlooked, the fact will be indicated by its remaining on the table after all the portfolios have been filled. The correct location can then be obtained from the periodical cards (Item 4). In addition in later cycles there will be a number of periodicals remaining which have completed circulation. This fact can also be checked from the cards just mentioned. When all the portfolios, stamped with the return date, have been filled, they are distributed to the readers. At the end of the period (i.e. three days later), the portfolios, containing all those periodicals sent out in the period (Period A), are returned to the library. The contents are checked against the list on the sheet. As all the periodicals are numbered, the operation can be carried out quite quickly. Those on second or third cycle, etc., will have the numbers (2), (3), etc., against their numbers and can therefore be readily identified. Any missing periodicals are immediately checked with the readers.

All returned periodicals, thus checked, are laid out on tables and separated firstly into circulation cycles. Periodicals bearing their numbers only are in the first cycle, those bearing additional bracketed numbers, e.g. (2), (3), (4), etc., are in subsequent circulation cycles. Within each of these groups, the periodicals are arranged in order of periodical numbers. To these returned periodicals are added those from the display rack which bear the appropriate circulation period letter (in this example B, as period A circulation has just been completed). When these periodicals have been laid out as described, the returned portfolios, now empty, are stamped with the return date below the appropriate circulation period (in this example B for January). The periodicals indicated on the circulation sheet for period B are placed in the appropriate portfolio and again distributed. The procedure is repeated until the cycle A-H is completed.

After each A-H cycle has been completed, the bracketed number is altered to the next higher figure. In the case of periodicals bearing their serial number only, '(2)' is added to indicate second cycle circulation.

In the event of a reader wishing to retain a periodical because of the importance of part of its contents, the library is notified and the periodical returned in the normal manner. The periodical in question is then passed to the photo-copying department where a copy of the relevant section of the periodical is made. The periodical is returned to the library within an hour, to proceed on circulation, and the photo-copy passed to the reader as soon as it is available.

Those who are unable to read any periodicals during normal circulation through any reason other than annual leave, but wishing to read such periodicals ultimately, have only to write their names on the cover. In such cases the periodicals will be issued to them as normal loans after circulation has been completed.

In the case of annual leave the reader indicates in advance that he will

be on leave by writing 'AL' below the periodicals listed in the relevant periods on his circulation sheet. In such cases circulation of the periodicals concerned is withheld and the reader's name written on the covers by the library staff. These periodicals will then be issued to the reader after circulation has been completed, as individual loans.

The advantages of this system are :

- (a) Complete control over all movements of periodicals.
- (b) Precise location of any periodical at any given time.
- (c) Restricted circulation period reduces delay in total circulation time. This is a great help when, due to limitations of budget, duplicate copies of titles in great demand cannot be purchased.
- (d) Periodicals, undamaged by pasting on circulation slips and in addition protected in portfolios, are generally returned in much better condition.
- (e) No entering-up need be done or circulation slips prepared and attached during normal circulation. This is unnecessary, as circulation proceeds according to the allocation planned at the beginning of the year.
- (f) Total time occupied by weekly circulation is low. Apart from collection and delivery of portfolios, which is not undertaken by the library staff, only two hours is occupied each half week in circulating about 250 periodicals to 100 readers.
- (g) Since readers do not know the order in which they see the periodicals, circulation on the basis of interest priority rather than seniority is facilitated.
- (h) As the scheme has been in operation for over three years, readers now conversant with the routine co-operate in returning the periodicals.

The disadvantages are :

- (a) Reading time is limited to three days during circulation.
- (b) Reliance is placed on the liberal provision of photo-copies in overcoming delays in circulation.

This scheme, developed and operated in the Chemical Research Laboratory, Teddington, for over three years has proved a working proposition, and this account is published by permission of the Director.

MURCH and HEWETSON : CIRCULATING PERIODICALS

Appendix A

Mr. A				For library use only							
Nos. of periodicals required				A	B	C	D	E	F	G	H
1-49	50-99	100-149	150-217								
4	54	100	157	572 (2)	4Y	44 (2)	1372 (2)	571 (2)	85	106	94
6	57	106	170	462	541	12	32	461	111 (2)	66	1371
12	66	111	171	6	100	33	78	95	542	171	139
13	67	112	181	157 (4)	181	113	97	217	170	67	93
32	71	113	217	74	98	112 (2)	122	124	71 (2)	13	130
33	74	122									
44	78	124									
46	85	130									
	93	137									
	94	139									
	95										
	97										
	98										

Item 3. Reader's Record Card

6—Analytica Chimica Acta		
Mr. A — A	Mr. H — G	Mrs. O — F (2)
Dr. B — B (2)	Mr. I — H	Mr. P — G (2)
Mr. C — C	Miss J — F	Mr. Q — H (2)
Mr. D — D	Miss K — C (2)	Dr. R — B (4)
Mr. E — A (2)	Dr. L — E (2)	
Mrs. F — B	Mr. M — A (3)	
Dr. G — E	Mrs. N — D (2)	

Item 4. Periodical Card

Mr. A								
	A	B	C	D	E	F	G	H
January	572 (2)	4Y	44 (2)	1372 (2)	571 (2)	85	106	94
	462	541	12	32	461	111 (2)	66	1371
	6	100	33	78	95	542	171	139
	157 (4)	181	113	97	217	170	67	93
	74	98	112 (2)	122	124	71 (2)	13	130
Date for return								
February	572 (2)	4Y	44 (2)	1372 (2)	571 (2)	85	106	94
	462	541	12	32	461	111 (2)	66	1371
	6	100	33	78	95	542	171	139
	157 (4)	181	113	97	217	170	67	93
	74	98	112 (2)	122	124	71 (2)	13	130
Date for return								
March	572 (2)	4Y	44 (2)	1372 (2)	571 (2)	85	106	94
	462	541	12	32	461	111 (2)	66	
	6	100	33	78	95			
	157 (4)	181	113					
	74	98	112 (2)					
Date for return								

Item 5. Circulation Sheet

A SYSTEMATIC 'LINE FORMULA' CHEMICAL NOTATION

BY WILLIAM J. WISWESSER

Director of Chemical Research, Willson Products, Inc., Reading, Pa., U.S.A.

15th February, 1953

TECHNICAL librarians scarcely need to be reminded of the growing crisis in the field of chemical literature—the problem of efficiently retrieving facts about chemicals from the 1,200,000 technical and scientific articles that have been abstracted during the past fifty years, and the problem of finding sufficient shelf space for the rapidly increasing weekly and monthly additions in the 5,236 periodicals that are recognized as references by the chemical societies.*

The long-term difficulty in effectively recording and recovering facts about chemicals is that no simple method has been found for systematically describing the 600,000 to 1,500,000 chemical substances (molecular structures) that have been prepared and mentioned thus far. *Chemical notation*—not to be confused with nomenclature—is a system of symbols for denoting these structures in an exact manner. Recent interest has focused on structural descriptions of this kind, made with linear sequences of typewritten and printed symbols, because information in this form can be handled very efficiently on the punched cards that are used as information carriers in high-speed scanning, sorting, and tabulating equipment (such as Hollerith, IBM, or Remington-Rand machinery).

Professional interest in the development of a 'universally acceptable' chemical notation grew rapidly as the post-war technical literature emerged in 1946, and in 1949 chemists throughout the world were invited to submit their ideas to a newly-formed Commission on Coding, in the International Union of Pure and Applied Chemistry (IUPAC). Basic desiderata were outlined, and in 1951 ten proposed systems (each illustrated with a test list of about 900 compounds) were offered to this IUPAC Commission (1).** Four of these systems (Dyson, Gruber, Silk, and Wiswesser) are still being evaluated through coding and decoding trials on an additional test list of 3,000 compounds, by a group of approximately eighty volunteers working under the guidance of the National Research Council (Committee on Coding, Ciphering, etc.).

During the past fifteen years the author has sought a simple, systematic method for describing chemical structures with a minimum of writing and thinking effort. Meanwhile the growing international interest in this problem emphasized the timely need for a thorough historical review (2)

* The special supplement to the 1951 *Chemical Abstracts Index* (vol. 45) contains 255 pages of a 'List of Periodicals Abstracted', a total of 10,713 entries.

** Bracketed numbers identify the appended bibliographic references.

on the origin and survival of traditional structure-delineating methods, since 'traditions' represent long-enduring *majority preferences*. Most chemists, like other scientists, unfortunately are 'rusty' in virtually every chemical field beyond their own speciality ; hence they want a notational method which is familiar in principle, and very simple to use. The historical background which guided the author in his approach to a familiar and simple 'line formula' notation is given in this article ; it should serve as an enlightening introduction to the whole problem.

ORIGIN OF THE 'LINE FORMULA' METHOD

In 1860, at the first International Chemical Congress held at Karlsruhe (3), the leading chemists of the world met, debated, and finally resolved their progress-stifling confusions about atoms, molecules, radicals, and equivalents. (But for the persistence of the little Italian professor, Cannizzaro, they might have adjourned with the peace-making agreement to have one set of atomic weights for the organic chemists, and a different set for the inorganic chemists ! Cannizzaro reminded them that there was only one science of chemistry, one correct set of atomic weights.) This clarification immediately led to the general realization that organic compounds are characterized by definite and fixed atom-to-atom linkages. Alexander Butlerow, who was the first to speak of the *structure* of a molecule (4), predicted in that year that the future work of the chemist is to determine 'the nature and manner of the mutual union of the atoms in a molecule'.

Ever since this recognition of structural importance, chemists have shown the atom-to-atom connections in their printed literature simply by delineating the symbols for the corresponding molecular segments, one after another as connected. Thus in 1861 Josef Loschmidt (5) included among his remarkably astute graphical descriptions of 368 postulated structures, a few 'rationelle Formel' in the text, such as $C_2H_5.O.C_2H_5$ for diethyl ether ; $C_2H_5.O.CH_3$ for ethyl methyl ether ; and $C_2H_5.O.C_2H_4.O.C_2H_5$ for the glycol ether. In 1863 L. Carus (6) denoted methyl alcohol as $CHHH.O.H$; and a year later E. Erlenmeyer (7) denoted normal propyl alcohol simply as $C_3H_7.OH$.

In 1866, A. Kekulé (8), Henry Debus (9) and H. L. Buff (10) helped popularize this 'line formula' technique with scores of lucid delineations such as those shown in the second column of Table 1. At the same time, Frankland and Duppa (11) urged the use of effort-saving symbols such as *Me* for the methyl group, *Ae* (later *Et*) for 'aethyl', *Pr* for propyl, and *Bu* for butyl. The symbol *Ph* for the phenyl group soon appeared with these, while the symbols *Ac* for the acetyl radical, *Bz* for benzoyl, and *Cy* for cyano, had been in use for many years. This natural desire to prefer simple symbols for *very frequently encountered* atomic groups led the author to select *simple Arabic numerals* for the ever-present alkyl chain groups (connective segments as well as terminal units), and the letter *R* for the equally prominent phenyl group or benzene ring.

Unsaturation marks (double bonds, usually indicated with colons) and

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ring-closing angular marks also made their first appearance in 1866, in Erlenmeyer's papers (12). The L- or J-shape of the ring-closing marks suggested the author's practice of reserving the typewriter bracket marks or parentheses to 'enclose' the complete symbolism for all ring systems except the simple benzene ring. The benzene ring occurs so frequently in the general chemical literature that it outnumbers all other ring structures combined ; hence the use of a single mark for this common component is little more than a common-sense recognition of the statistical facts.

TABLE 1A. SIMPLE ALIPHATIC (OPEN-CHAIN) STRUCTURE NOTATIONS

<i>Present Name</i>	<i>1866 Notation and Author*</i>	<i>Systematic Notation</i>	
Ethylene	$\text{CH}_2.\text{CH}_2$	(D)	1 : 1
Acetylene	$\text{CH}.\text{CH}$	(D)	1 : : 1
Acetone	$\text{CH}_3.\text{CO}.\text{CH}_3$	(D, K)	1V1
Ethyl methyl ketone	$\text{CH}_3.\text{CH}_2.\text{CO}.\text{CH}_3$	(D)	2V1
<i>n</i> -Pentene-1	$\text{CH}_3.2\text{CH}_2.\text{CH}.\text{CH}_2$	(D)	4 : 1
Acetyl chloride	$\text{CH}_3.\text{COCl}$	(D)	GV1
Ethyl cyanide	$\text{CH}_3.\text{CH}_2.\text{CN}$	(D)	NC2
Acetaldehyde	$\text{CH}_3.\text{COH}$	(D, B)	O : 2
Alcohol, Ethyl	$\text{CH}_3-\text{CH}_2-\text{OH}$	(B)	Q2
Glycolaldehyde	$\text{COH}-\text{CH}_2-\text{OH}$	(B)	Q2 : O
Acid, Acetic	$\text{H}_3\text{C}-\text{CO}-\text{OH}$	(B)	QV1
Acid, Cyanoacetic	$\text{NC}-\text{CH}_2-\text{CO}_2\text{H}$	(B) (D)	QV1CN
Acid, Chloroacetic	$\text{ClCH}_2-\text{CO}_2\text{H}$	(B)	QV1G
Acid, Glycolic	$\text{HO}-\text{CH}_2-\text{CO}_2\text{H}$	(B)	QV1Q
<i>beta</i> -Alanine	$\text{H}_2\text{N}-\text{CH}_2-\text{CH}_2-\text{CO}_2\text{H}$	(B)	Z2VQ

* (B) = Buff, Ref. 10 ; (D) = Debus, Ref. 9 ; (K) = Kekulé, Ref. 8. Kekulé barred his C and O symbols (as C and O) to show that they represented the 'new' atomic weights.

A summary of notational traditions, from the Berzelian atomic symbols of 1814 (13) to the current Brand-Edsall symbols for aminoacid residues in polypeptides (14), reveals that *letter* symbols always have been reserved to denote atoms and atomic groups (cited as connected when linear), while *punctuation marks* are used to denote modes of connection or disconnection (e.g., periods to denote side group terminations). These observations suggested that the simplest type of chemical notation, and probably the most concise, would be a '*line formula*' symbolism in which the most frequently encountered structure segments are represented by single marks—such as Q for the hydroxyl OH-group in alcohols, phenols, and acids ; and V for the carbonyl $-\text{CO}-$ connective in ketones, esters, and acids. All rarely encountered atomic groups are 'spelled out' in full, as in AsHH— for the arsino group. In all further considerations, such as the selection of easily-remembered symbols, the foremost guiding aim is the 'Principle of Least Effort', a long-neglected basic law of human nature which George Kingsley Zipf recently emphasized as a fundamental

behaviour pattern (15), comparable to the physical principle of Least Action.

SELECTION OF SYMBOLS

The *two*-letter international atomic symbols for *inert* and *metallic* elements (81 in all) are retained to denote single atoms of these elements ; the six *one*-letter symbols for inert or metallic elements (A, K, U, V, W and Y) are lengthened consistently to two-letter symbols (Ar, Ka, Ur, Vd, Wf and Yt), in order to improve the visual and mechanical identification of these rarely encountered symbols, and to release the six single letters for more important uses. (Old treatises reveal that the present symbols Er, Li, Mn and Rh originally were one-letter symbols, like the early symbol G for glucinium. Occasionally Yt is used instead of Y for yttrium.)

TABLE 1B. SIMPLE PHENYL RING (AROMATIC) STRUCTURE NOTATIONS

<i>Present Name</i>	<i>1866 Notation and Author</i>	<i>Systematic Notation</i>	
Ethyl-benzene	$C_6H_5-CH_2-CH_3$	(B)	2R
Benzyl bromide	$C_6H_5-CH_2Br$	(B)	E1R
Benzoyl chloride	$C_6H_5.CO.Cl$	(K)	GVR
Benzyl cyanide	$C_6H_5.CH_2.CN$	(K)	NC1R
Benzaldehyde	$C_6H_5.CO.H$	(K)	O : 1R
Alcohol, Benzyl	$C_6H_5.CH_2OH$	(K)	Q1R
Phenol (Acid, Carboic)	$C_6H_5.OH$	(K)	QR
Acid, Hydrocinnamic	$C_6H_5.C_2H_4.CO_2H$	(K)	QV2R
Acid, Benzoic	$C_6H_5.CO.OH$	(K)	QVR
Benzene	$C_6H_6.H$	(K)	R
Aniline	$C_6H_5.NH_2$	(K)	ZR
Benzamide	$C_6H_5.CO.NH_2$	(K)	ZVR

All of the one-letter symbols for non-metallic elements (B, C, F, H, I, N, O, P and S) are retained to denote *single* atoms of these elements ; the two most frequently encountered halogen atoms also are denoted with distinctive one-letter symbols : the seventh letter G for chlorine, and the letter E for bromine. (Note that both letters are adjacent to F, and both are found in the word *haloGEN*.) The use of G instead of Cl also avoids an objectionable typewriting ambiguity. The symbols Al and Tl for metallic elements are typed as AL and TL to avoid a similar ambiguity.

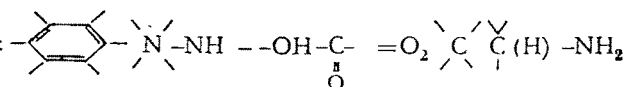
The symbols C, N and O are used only to distinguish H-free segments, such as CN- for isocyanato, CNO- for fulminato, NC- for cyano, NCO- for cyanato, NCS- for thiocyanato, OCN- for isocyanato, and SCN- for isothiocyanato radicals ; unsaturation marks (colons) are not interposed to describe any of these 'resonance-blurred' structures, nor simple acetylenic -CC- connective groups. The letter N is used to denote *tertiary* N-atoms, and (with the colon) azo -N : N- or N : N : groups. The letter O is used to denote etheric and esteric -O- linkages, and (with

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colon) aldo or keteno O : terminals. *Cis-trans* double bond distinctions are shown by adding a *comma* (cis) or *stroke* mark to the colon, and unresolved *cis-trans* unsaturations are indicated by replacing the colon with a *semicolon*.

Nine distinctive single-letter symbols are introduced to denote important functional groups or specially 'branched' N and C atoms, defining these as follows :

SYMBOL : R K M Q V W X Y Z

MEANING : 

The value of mnemonic aids is recognized in noting the shape of the K-, V-, X- and Y-bond patterns ; K also suggests 'Kwaternary Kation' ; M is taken from *Mid-aMino* and *iMino*, Q from *aQua*, R from *Resonating Ring* and Z from *hydraZine*, (NH₂)₂. The V denotes a Very common diValent connective, and W represents the 'double-O' in -NO₂ and -SO₂- groups ; it is not used to describe *linear* combinations such as OCO, ONO, OSO and OCCCO, which are denoted pictorially as shown.

All of these old and new symbols are linearly combined in a familiar manner with the 'alkyl chain' numerals as shown in Table 1. The numerals merely indicate the *number of carbon atoms in the unbranched hydrocarbon chain segments*, which are fully saturated unless otherwise indicated (by colons) at the terminals. The third column in Table 1 shows how these earliest structure delineations can be represented systematically by (1) citing the symbols segment by segment as connected ; (2) by putting initial (alphabetizing or indexing) emphasis on the *functional groups* which characterize open-chain compounds, subordinating all 'alkyl group' numerals to the functional letters ; and (3) by similarly subordinating the phenyl ring symbol R.

Systematic structure descriptions should give one and only one 'preferred' sequence of symbols for each structure, and should bring similar structures together when alphabetically indexed. The linear symbol sequences shown in the third column of Table 1A are systemized by starting at the terminal which gives the *biggest numero-alphabetic listing*, the rank from lowest to highest being 0 1 2 ... 9 A— X Y Z. This same simple resolving method also is the 'last resort' in more complex structures. The zero is slashed as shown, to distinguish it from the letter O (for oxygen) ; the period and comma are ranked between 9 and A ; and the colon is ranked as the letter U (Unsaturation).

Space does not permit giving an adequate discussion of the many types of chemical structures in this brief article, but the several simple types mentioned here are explained in sufficient detail to illustrate operation of the guiding principle of 'least effort'. For example, in text or similar detached copy, the 'pure number' notations are suffixed with the

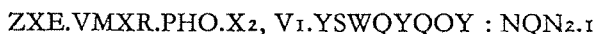
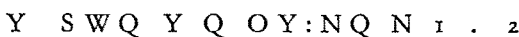
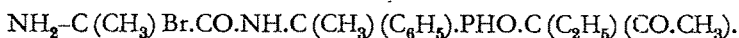
letter H (for hydrocarbon) to identify them as chemical structure notations. Complete coding instructions will be given in a small instruction manual (in press).

BRANCHED CHAIN STRUCTURES

The majority of open-chain compounds, like all of those in Table 2, contain carbon atoms bonded to one or two 'side groups' (other than the keto : O group, denoted as a bivalent letter V). These 3-co-ordinate and 4-co-ordinate C-atoms (and the quaternary-cationic N-atoms) give distinct chemical and physical properties—such as characteristic infra-red frequencies ; hence the three frequently used 'branch' symbols Y, X and K are justified to indicate distinct structural patterns. Application of these branch symbols also invites a systematic notational contraction : the side groups are methyl branches in the vast majority of cases, so Y, X and K segments can be defined further as *methyl-branched unless otherwise specified*. Again following 'least effort' aims, side groups ending in strictly terminal or monovalent symbols (such as E, F, G, H, I, Q and Z) *need not be punctuated* unless stereoisomeric distinctions are to be indicated. (The stereoisomeric 'dropped' or D-groups, in the horizontally oriented main line, are punctuated with the *comma* and L- or 'lifted' groups with the *stroke*, instead of the period mark that traditionally is used to terminate side groups.)

Branched structures are delineated in a manner designed to give maximum notational clarity : the 'main line' which begins and ends the symbol sequence is generally determined by the longest line of branched atoms, then the longest line of symbols—counting each letter, colon, and numeral equally. The branches denoted by the fewest symbols thus become the 'side groups'.

Dr. A. D. Mitchell (16) strikingly illustrated the exact nature and power of the 'line formula' convention by delineating a very extensively branched structure, segment by segment as follows :



The one-to-one correspondence with this systematic notation is shown, first by citing a symbol for each line-formula segment, then by applying the branch contractions.

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TABLE 2. BRANCHED CHAIN STRUCTURES DESCRIBED BY DEBUS IN 1866

Present Name	1866 Notation*	Systematic Notation
Hexachlorethane	$\text{CCl}_3.\text{CCl}_3$	GXGGXGGG
Trichlorethane (1, 1, 2)	$\text{CH}_2\text{Cl}.\text{CHCl}_2$	GYG ₁ G
Pentachlorethane	$\text{CHCl}_2.\text{CCl}_3$	GYGXGGG
Tetrachlorethane (sym.)	$\text{CHCl}_2.\text{CHCl}_2$	GYGYGG
Acid, Glyceric	$\text{CH}_2\text{OH}.\text{CHOH}.\text{CO}.\text{OH}^*$	QVYQ ₁ Q
Acid, Tartaric (Racemic)	$\text{COOH}.\text{CHOH}.\text{CHOH}.\text{COOH}^*$	QVYQYQVQ

* Debus had used a dot over H-letters to denote 'oxidation' to an OH-group ; these hydroxyl O-atoms, like his carbonyl O-atoms, are 'spelled out' in full above.

RING BRANCHES

In 1866 Kekulé (8) explained benzene ring isomerism with a hexagon lettered as shown in the inset. The three bi-substituted (*ortho*, *meta*, *para*) isomers were explained as combinations at the *ab*, *ac* and *ad* positions ; the three tri-substituted isomers as *abc*, *abd* and *acd* combinations ; and so on. Kekulé indicated these distinctions linearly by interposing H-symbols where necessary, as shown in Table 3.

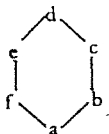


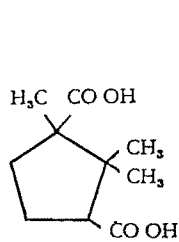
TABLE 3. RING ISOMERS DESCRIBED BY KEKULÉ IN 1866

Present Name	1866 Notation	Positions	Systematic Notation
Xylene (unspecified)	$\text{C}_6\text{H}_4(\text{CH}_3)_2$	(a, x)	1R _x
<i>ortho</i> -Tolylacetic acid	$\text{C}_6\text{H}_4(\text{CH}_3).\text{CH}_2.\text{CO}_2\text{H}$	(a, b)	QV ₁ R ₁
<i>meta</i> -Hydroxybenzoic acid	$\text{C}_6\text{H}_3.\text{OH}.\text{H}.\text{CO}_2\text{H}$	(a, c)	QVRcQ
<i>para</i> -Hydroxybenzoic acid	$\text{C}_6\text{H}_2.\text{OH}.\text{H}_2.\text{CO}_2\text{H}$	(a, d)	QVRdQ
α , γ -Xylic acid	$\text{C}_6\text{H}_3(\text{CH}_3)_2.\text{CO}_2\text{H}$	(a, x, y)	QVR _{xy}
Salicylic acid	$\text{C}_6\text{H}_4.\text{OH}.\text{CO}_2\text{H}$	(a, b)	QVRQ
3, 4-Dibromonitrobenzene	$\text{C}_6\text{H}_2(\text{NO}_2)\text{HBr}_2$	(a, c, d)	WNRcE dE
3, 5-Dibromonitrobenzene	$\text{C}_6\text{HBrHBrHNO}_2$	(a, c, e)	WNRcE eE
2, 4-Dibromonitrobenzene	$\text{C}_6\text{H}_2\text{BrHBr}(\text{NO}_2)$	(a, b, d)	WNRE dE
2, 5-Dibromonitrobenzene	$\text{C}_6\text{H}_2\text{BrH}(\text{NO}_2)\text{Br}$	(a, b, e)	WNRE eE
2, 6-Dibromonitrobenzene	$\text{C}_6\text{H}_3\text{BrNO}_2\text{Br}$	(a, b, f)	WNRE fE
<i>ortho</i> -Toluidine	$\text{C}_6\text{H}_4.\text{NH}_2.\text{CH}_3$	(a, b)	ZR ₁

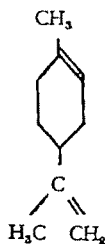
ISOMER SUMMARY (for identical groups only) OF BENZENE DERIVATIVES

- 3 bi-substituted isomers : *ortho* (ab), *meta* (ac), *para* (ad)
- 3 tri-substituted : *vicinal* (abc), *asymmetric* (abd), *symmetric* (ace)
- 3 tetra-substituted : (abcd), (abce), (abde)
- 1 mono- or penta-substituted, and 1 hexa- or un-substituted isomer.

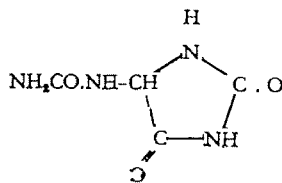
Two equally simple expedients are incorporated in this systematic notation: (1) Ring positions are denoted, when necessary, with concise and distinctive *lower case letters*. (2) A branch symbol placed in *front* of the ring symbol is understood to be in the *first* position, and one immediately *suffixed* to the ring symbol is understood to be in the *second* position; all other positions are denoted with interposed locants, as shown in the



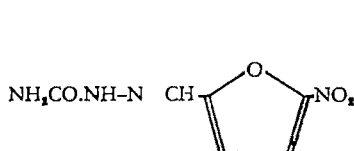
Camphoric Acid
(5//) aVQ abb cVQ



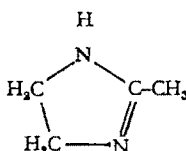
Limonene
(6/c :) aY 1 d



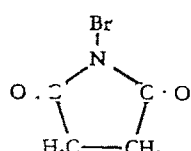
Allantoin
(5.MVMV) eMVZ



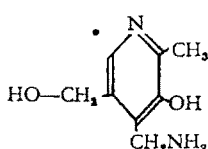
Furacin
(Nitrofurazone)
(5.o) NW el . NMVZ



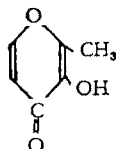
Lysidine
(5/McNb .) 1



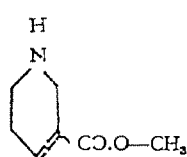
N-Bromosuccinimide
(3/NVeV) aE



Pyridoxamine
(6.N) 1 cQ d1Z crQ



Maltol
(6.OdV) 1 cQ



Guvacoline
(5/Mc :) cVO1

Fig 1. Typical Monocyclic Delineations.

third column of Table 3. The clarity of a multi-branched delineation may be improved by inserting a blank space in front of the third, etc., locant-and-branch symbolism, as shown in some of the examples. (This 'empty column' also serves as a 'lower case' translating operator in teletype or punched card applications.) Methyl groups again are the most prominent of all ring branches, so *all ring branches are methyl groups*

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unless otherwise specified. Unspecified small ring positions are indicated with the locants x, y and z.

RING NUMBERS FOR RING SYSTEMS

Arabic numerals have become familiar as ring size symbols—usually with bold face distinction—ever since *Chemical Abstracts* started its Ring Index in 1916. For polycyclic structures, these ring numerals are used in a mathematically precise manner to denote the fewest number of

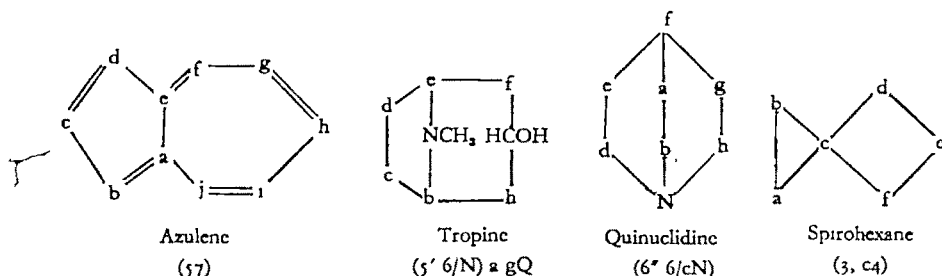


Fig. 2 Locant patterns for fused, bridged, and spiro bicyclic systems. Each unsubstituted CH or CH₂ position is identified by its locant.

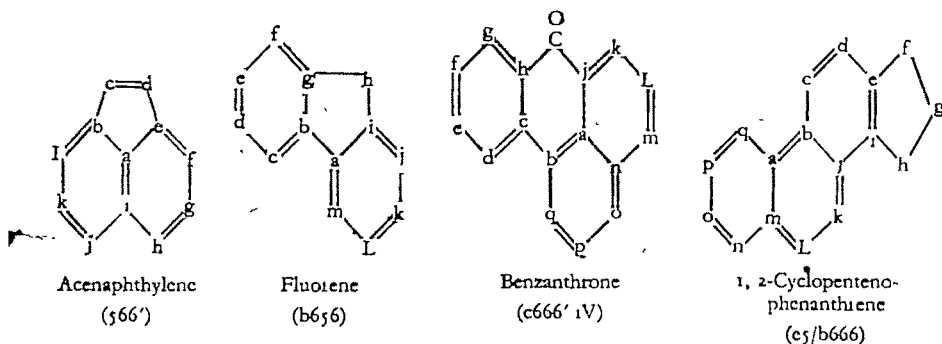


Fig. 3. Locant patterns for tricyclic and pentacyclic examples. The suffixed prime mark denotes a 'tuple point' atom.

Ring systems also can be described precisely by the *non-consecutive bonds*: e.g., (ac, ai, lib) for (566'), (bg, ai, am) for (b656); (ei, bi, am, aq) for (c5/b666).

smallest rings passing through every atom in the ring system. This simple and familiar method is retained for denoting all cyclic systems other than benzene rings, with the following further refinements :

- (1) each separate ring system description is distinctively enclosed in ring brackets or parentheses (see figure 1).
- (2) each unbridged ring number is punctuated with a 'saturation' stroke mark if the represented ring is not dehydrogenated to the aromatic limit, as described.

- (3) mono-heterocyclic positions are determined by the *lowest* sequence of hetero-symbols (K, M, N, O, S) ; these heteroatoms are cited in connecting order, immediately after the ring-number punctuation mark. Mono-carbocyclic positions are determined by the *lowest* set of branching positions.
- (4) fixed (non-aromatic) cyclic unsaturations are denoted with appropriate locant-and-colon marks, cited as the last detail within the bracketed cyclic 'unit'.
- (5) all open-chain locants and symbols are cited after the bracketed description, in ascending alphabetic order of the locants.
- (6) atomic bridges in bicyclic and higher systems are denoted with prime marks, cited in a pictorially direct manner between the corresponding numerals (see figure 2).
- (7) tricyclic and higher sets of ring numerals are cited in connecting (pictorially direct) order (see figure 3).
- (8) polycyclic ring positions are determined by the ring-fusing pattern, generally as illustrated in figure 3. These positional relations are fixed through a longest possible chain of ring positions ; this chain starts at the (generally centric) point which gives the *smallest* set of *lowest* positions in each ring.

Several pages of advanced text would be necessary to illustrate fully this 'least effort' method of linearly denoting the many kinds of cyclic structure details. The examples shown in the figures serve only to illustrate the general appearance of typical cyclic delineations. Further comments will be found in the *C & E NEWS* report (2) and in a detailed coding manual, now in preparation.

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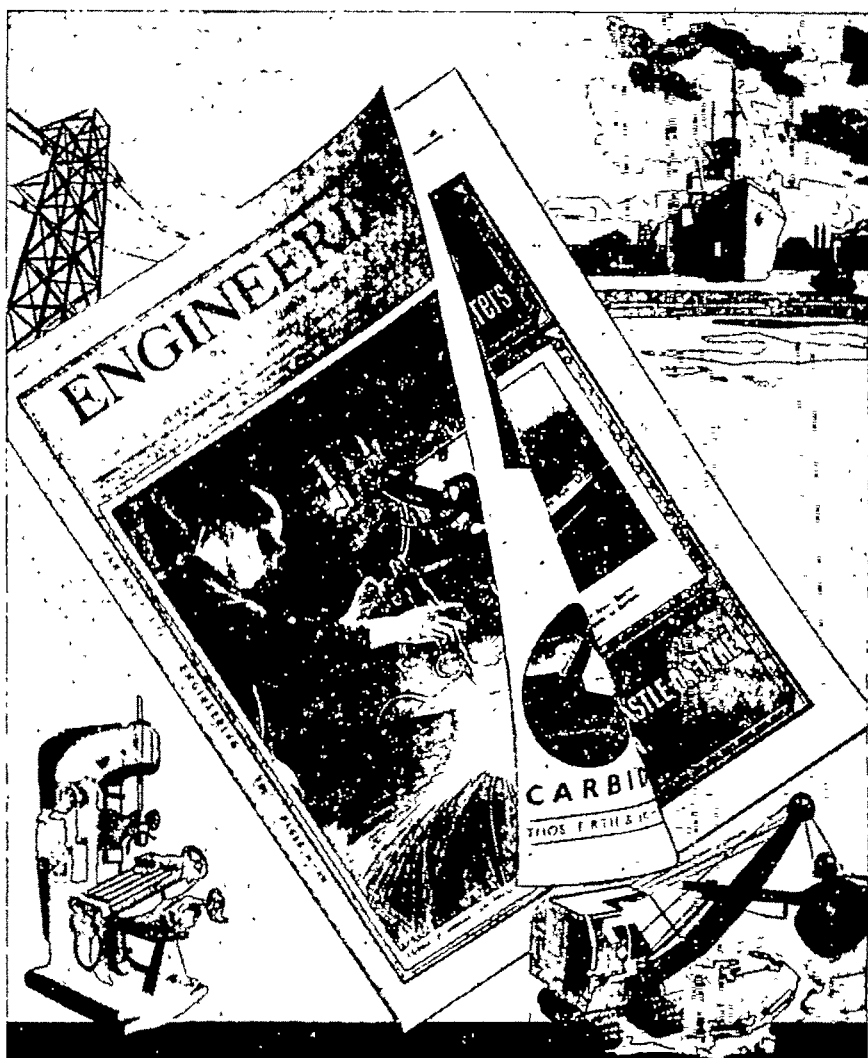
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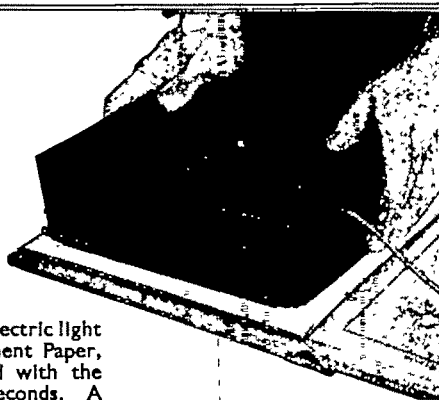
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ASLIB PROCEEDINGS

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INTRODUCTION

THE Conference of the Scottish Branch of Aslib was held this year on 27th February at the Mitchell Library, Glasgow, under the Chairmanship of Dr. D. G. Brown. The opening address was given by Sir Andrew McCance, Deputy Chairman and Joint Managing Director of Messrs. Colvilles, Ltd., and is reported in this issue. He was followed by Mr. M. C. Pottinger, Librarian of the Scottish Central Library, who surveyed Scottish resources of scientific and technical literature and information, and by Dr. C. Macrae who described the work of the Scottish Council. Both these papers are given in full. In the afternoon Mr. J. Revie, of the British Jute Trade Research Association, traced the steps by which a small special library could be set up, and Mr. E. N. Simons, of Messrs. Edgar Allen & Co., Ltd., spoke on the writing of English in abstracts and reports. Mr. Revie's paper is included in this issue; that by Mr. Simons was published in the May, 1953, number of *Aslib Proceedings*.

The Midlands Branch of Aslib organized a series of meetings in 1952-3, presenting the 'user' aspect of special library and information services. The first, dealing with the point of view of a Director of Research and Development, was given on 14th October, 1952, by Dr. J. H. Chesters, Assistant Director of Research at the United Steel Companies, Ltd. On 26th November the requirements of a Sales Development department were discussed by Mr. H. M. Bigford, of T.I. Aluminium, Ltd. His paper is given in summary. In January, 1953, the viewpoint of the worker engaged on longer term research was described by Mr. H. T. S. Swallow, of Radiation, Ltd., and a paper based on his talk is printed in this issue. The series of meetings for the session was closed by a meeting held jointly by the Midlands Branch of Aslib and the Institution of Production Engineers on 25th March, 1953, at which Mr. G. Gilfillan, Research Fellow at the Department of Engineering Production, University of Birmingham, presented a paper on the organization and use of sources of information in industry. This is reproduced in full in this issue.

The Second Annual Conference of the Aslib Aeronautical Group, held in conjunction with the Advisory Group for Aeronautical Research and Development of N.A.T.O., took place at the College of Aeronautics, Cranfield, from the 27th to the 30th of March, 1953. Some eighty people attended, including representatives from Australia, Canada, France, Holland, Italy, Sweden, Switzerland, and the United States, and a great deal of useful work was done. Of the sixteen papers prepared for the

conference, three—by Mr. P. J. Neumann, University Heights Library, New York University ; M. Frenot, of the SDIT in Paris ; and Mr. Eugene B. Jackson, of NACA, Washington—are published in this issue. A fourth, by Mr. R. A. Fairthorne, is published in an expanded version in the *Journal of Documentation*, vol. 9, no. 2, June, 1953.

The activities of Aslib's Branches and Groups, not to mention those conferences and meetings organized by the London headquarters, are now so numerous that it is difficult to find space for all the papers that spring from them. For this reason we have regretfully had to hold over the paper by Mr. W. B. Ingram on the Iron Library at Schaffhausen, presented at the Stoke-on-Trent meeting organized by the Northern Branch on 12th March, 1953. It is hoped that it may be possible to include it in the next volume. The present issue closes with the account of Aslib's work for the year ending 31st December, 1952, taken from the Annual Report, and with the Annual Report and accounts of the British Union Catalogue of Periodicals for the year ending 31st March, 1953.

It is with the utmost regret that we have to record the death of Mr. Charles Le Maistre, C.B.E., on 5th July, 1953. A tribute to his many services to documentation and to Aslib appears on p. 151.

E. M. R. DITMAS,
Editor.

CHARLES LE MAISTRE

1874-1953

With the death of Charles Le Maistre, C.B.E., F.C.G.I., M.I.E.E., A.M.Inst.C.E., on 5th July, 1953, the world of documentation has lost a familiar figure and Aslib itself a true and honoured friend.

Le Maistre was born in Jersey in 1874 and trained as an electrical engineer. From 1901 until 1943 he served with the British Standards Institution and its predecessors the Engineering Standards Committee and the British Engineering Standards Association, becoming the Institution's first Director in 1929. His retirement in 1943 enabled him to devote more time to international affairs and he played a prominent part in the formation of the United Nations Standards Co-ordinating Committee; he served as Secretary of that body until it was dissolved in 1946 to make way for the International Standards Organization. For nearly fifty years he was also General Secretary of the International Electrotechnical Commission.

In spite of such numerous and insistent calls upon his time, Le Maistre cheerfully accepted Aslib's invitation in November, 1942, to become a member of its Council, an office to which he brought his enthusiasm, wisdom and wide experience until his death. His years as Chairman, 1945-51, were some of the most tortuous in Aslib's history: the Aslib Microfilm Service had to be wound up and its equipment disposed of; the negotiations leading up to the merger with the British Society for International Bibliography had to be conducted; increased support for Aslib's work had to be won from industry and other sources and the detailed examinations made of Aslib's potential ability to put to full use the increased Government aid that was then becoming available. All this at a time when neither money nor elbow-room could keep pace with Aslib's expanding commitments. In all these matters Le Maistre was a tower of strength to his fellow officers and the Director. He nevertheless found time to be President of the International Federation for Documentation from 1946 to 1951, and to the leadership of that body he brought a wealth of experience in international negotiation and a conviction that to make haste slowly offered the Federation its surest hope of fulfilment. It was largely thanks to his efforts that Aslib became the official British member of the Federation and, as an active member of the Aslib International Relations Committee right up to the onset of his final illness this year, he worked indefatigably to ensure that Aslib's policies and those of the Federation should run in complete accord. In recognition of his years of service to documentation, he was elected an Honorary Member of Aslib in 1951.

Le Maistre had his enemies, it is true. In a man who touched life at so many points it could hardly have been otherwise. For such, his sense of mission was self-interest, his assiduity was obstinacy, his charm of manner the suavity of a diplomat. Only history will show how lamentably wrong any such judgment must have been. To talk with him in the lounge of the Athenæum, to ramble with him through the Surrey lanes on a Sunday afternoon or to sit round a committee table under his chairmanship was to appreciate him for what he was: a man who praised his God by giving full play to every talent with which he had been endowed.

L.W.

CONFERENCE OF THE SCOTTISH BRANCH : OPENING ADDRESS

BY SIR ANDREW MCCANCE, D.L., D.Sc., LL.D., F.R.S.

Deputy Chairman and Joint Managing Director of Messrs. Celballes, Ltd.

Glasgow, 27th February, 1953

I AM glad to attend this Conference this morning, even if my only function is to wish you success in the work which you are doing and to give you sympathetic support and encouragement in the expansion of your activities.

More than one speaker on previous occasions has referred to the tremendous growth of knowledge that has taken place in the last half century. What has usually been referred to as the stream of knowledge has now become a raging torrent and a flood. The individual who in the old days enjoyed swimming quietly with the stream, now finds himself swept off his feet and out to sea where he flops about more or less bewildered and lost.

It is in such circumstances that your Association, Aslib, is welcomed as a pilot and guide to take the bewildered swimmer in tow and to help him to get his feet firmly planted on dry land again.

The need for such a service is unquestioned. The range of knowledge is become too vast for anyone to find what he wants in this wilderness without expert guidance. It is not only the details that are baffling. The very names of some of these newer developments seem in themselves to demand study and research before you have an inkling of their meaning.

The tremendous growth in the extent of scientific knowledge can be illustrated very well by the growth of standard reference books like *Landolt-Bornstein*.

In 1910, the main content of scientific data which had accumulated from the work of previous generations up to that date could be contained in two volumes with a total of about 2,000 pages.

There are now in process of publication additional volumes of the same reference book containing scientific information which has accumulated since 1937—that is, during a period of a little more than fifteen years. As far as I can judge, it is to consist of four volumes, each of which is in three or four sections—almost as large as the original volumes themselves—the total running to probably 10,000 pages or more.

That illustrates the astonishing acceleration in the rate at which knowledge is being accumulated, and if we look back with envy at the peaceful and quiet existence of scientists a century ago, let us look forward a century hence to the hectic life that will be forced on future scientists trying to keep abreast of their own activities and regard our present existence with the contentment that comes from the knowledge of being the happy mean between these two extremes.

Even at the present time, I am often surprised at the sudden calls there

McCANCE : SCOTTISH BRANCH CONFERENCE

are for information on out-of-the-way subjects. In a large organization one can generally turn to some member of the staff who can supply the necessary clue as to where the information may be found. But there are many occasions when one has to admit oneself defeated and has to send out an S.O.S. for help. Unfortunately, you cannot just send out the S.O.S. message and expect that somewhere someone will have picked it up and will answer your urgent call.

In a small organization the position is even more difficult and the call for help comes quicker.

It is to that service to suffering humanity that your members are dedicated and the expansion of Aslib over the years has shown the steady growth of appreciation in public regard.

By holding conferences in various centres you are not only helping your own members through the discussion of the problems in which they are interested, you are extending the knowledge of your work to those who may benefit from it and who may be entirely unaware of the help you are able to give them.

Like every other human activity, the greatest advantage comes from those who have been trained in the technique of its application. To know a country well demands more than a knowledge of the A class main roads, it requires also an intimate knowledge of the B class side roads, and even the lanes and the footpaths.

I have often been struck by the frequency with which an inventor who has worked out a new device or improvement finds that he has been anticipated when he comes to patent it—sometimes by many years. You may recall that Brearley, who quite independently discovered the chromium stainless steels in 1912, could not get a patent in Britain because Clark and Wood had patented the same idea in 1865.

I refer to this instance because it is an example from the industry with which I am associated and naturally it is one which comes more readily to my mind. It is an example which illustrates both the advantage and the weakness of our position in the search for existing knowledge.

The advantage of having a well organized and a well documented system of search available in order to know whether an idea that is new to current thought is as new as it appears will always be of very great service.

The weakness lies in the fact that until someone clearly defines the apparently new idea it is not possible to start the search at all. It may well be that other novel ideas lie buried in the pages of our patent files or the technical literature awaiting to be rediscovered.

But how can the imagination, which alone can uncover the latent value and make it evident, be focussed on those rare cases which deserve and justify such attention?

This might be regarded as the research side of your activities. It is something which is perhaps a little outside the main avenue of your work, concerned as it is with making available to those who require it all known information on a specific subject.

Even in that more restricted form, the expectation of success would be

small indeed without some systematized scheme of approach. I do not know how many scientific journals—real or pseudo—are published in the world to-day, but I have seen it variously estimated, generally in the region of 40,000 or 50,000. Discarding a large proportion—probably 75 per cent., if not more—as being of no importance, there is still left a formidable wilderness for the seeker after truth to get lost in if he is without a guide.

With a few main avenues, a few well trodden paths, the traveller who knows his way can quickly reach the destination wherein his interest is centred without loss of time.

That indeed is one of the chief purposes of your work and one of your most valuable services. You are the civil engineers of the library world—the people who create the main roads and the by-roads that take the traveller quickly and without loss of time to the destination of his choice.

In the wilderness of knowledge that is still growing and growing with an almost bewildering rapidity, there is a constant demand for new roads and for new avenues of approach, together with an ever-present need to keep the old roads in a state of good repair.

How to do that most effectively is one of the main topics of your discussion at this Conference. Your success in this work makes a very real contribution to the speeding up of scientific and industrial progress.

As one of those who benefit in this way both directly and indirectly, I feel a special pleasure in wishing your Conference every success.

SCOTTISH RESOURCES OF SCIENTIFIC AND TECHNICAL LITERATURE AND INFORMATION AND THE NEED FOR MORE SYSTEMATIC ORGANIZATION

BY M. C. POTTINGER, D.S.C., F.L.A.

Librarian, Scottish Central Library

Glasgow, 27th February, 1953

THIS paper this morning cannot pretend to be more than a brief and necessarily sketchy survey of the subject. Indeed, I hope that what I say will have the effect of underlining the need for (1) a more detailed and systematic survey of the field, and (2) a more effective co-ordination of these resources.

Many of those present are familiar with the objects and the functions of the Scottish Central Library. For the information of those others who have not used our facilities in the past, or who have not felt any need to use them, may I refer in a very few sentences to what the Scottish Central Library sets out to do. It is partly financed by the Treasury and partly by the Carnegie United Kingdom Trust. Its function is to act as the central clearing-house for inter-library co-operation in Scotland. It is the central agency for bringing about the inter-loan of books, periodicals, etc., between the public libraries, the university libraries, the special, institutional and research libraries within Scotland. We also act as a clearing-house for the lending and borrowing of material between libraries and institutions in Scotland, and organizations outside Scotland, including libraries overseas. I think, therefore, that it is not too much to claim that we have, at the Scottish Central Library, special opportunities for acquiring in the course of our duties a good deal of miscellaneous information about Scottish resources. The more we learn, however, the more we realize we have yet to learn. Hence, to some extent, this paper. I felt it would be a sobering and salutary exercise for me to try and set down some notes on Scottish resources of scientific and technical literature and information; and it is also my hope that you, ladies and gentlemen, in the subsequent discussion, will be able to fill in some of the gaps and point out the doubtless numerous errors of omission.

I think the first thing I want to say is that, year by year, I become increasingly impressed with the remarkable wealth and diversity of material which now exists in Scottish libraries and other institutions. I have been specially struck by the combined riches of scientific and technical material in our four Scottish university libraries, in particular. All of us know that our university collections are extremely important and valuable, but there have been times when I have been frankly astonished at the regularity and the frequency and the promptitude with which they have been able to produce the most out-of-the-way technical and scientific papers required by other research bodies.

One of my favourite research organizations in Scotland is the Brown

Trout Research Laboratory, at Pitlochry, in Perthshire. I am, from the start, unfairly prejudiced in favour of any organization which is concerned about more, bigger and better brown trout. But I single out this body as one example of a research organization operating in a village remote from a large centre of population, and without that ready accessibility to libraries which is enjoyed by research bodies located in or near our large cities and towns. A few weeks ago I analyzed the record of the Brown Trout Research Laboratory's applications to the Scottish Central Library during the last six months of 1952. I found that in that period they had applied to us for eighty-seven articles appearing in some sixty-two scientific journals published in Great Britain and overseas. Of these applications, seventy-nine had been satisfied, and the journals supplied, apart from those published in the United Kingdom, included scientific periodicals published in U.S.A., Canada, Australia, France, Germany, Denmark, Russia, Japan and the Philippines.

Now, the diversity of material required by this single research establishment will not surprise those of you who are research librarians. The scientists concerned had kept abreast of their references and abstracts, and were very properly determined to check these articles before committing themselves to experiments which had perhaps been conducted and concluded by colleagues working elsewhere. And that, I think, underlines one of the great responsibilities of special librarians and information officers. Scientific and technical research is international. Your scientist, your chemist, or biologist or metallurgist, knows his way around his particular science, but he must rely upon you to procure for him the record of what his colleagues in other places have done or are doing. Research is expensive. Overlapping and duplication of experiment is wasteful. Hence the need for research librarians, and the need for organizing effective and reasonably quick access to the current documentation of research.

Coming back to this question of Scottish resources, what struck me about the Brown Trout record was that, with half-a-dozen exceptions, all these scientific journals were supplied from libraries within Scotland. Two of them came from Washington as photocopies, two or three from special libraries in England—but 90 per cent. came from Scottish libraries, chiefly from the university libraries. And that, in my opinion, was an excellent and admirable state of affairs. For one thing, it was a remarkable demonstration of the willingness of our Scottish universities to lend their material, even at the risk of some domestic inconvenience, to unrelated Scottish research organizations, with no kind of direct claim whatsoever upon the universities' resources. Secondly, the supply of material from Scottish sources to Scottish applicants makes for speed—and in laboratory work speed in the transmission of information is important. In the case of the Brown Trout Research Laboratory, the articles required were delivered, on average, inside four or five days of the request being made. Finally, and this is a large part of my thesis to-day, I am one of those who firmly believe that Scotland ought to be, so far as possible, self-supporting and self-reliant in this matter of exchanging literature and

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information on scientific and technical subjects—as well as literature in other fields of knowledge.

I do not present this point of view in any spirit of Scottish nationalism, a subject which keeps on cropping up every time a pillar-box gets blown up. But it seems to me only common sense that, whatever part of the country we live in, we ought to exploit local resources to the full, before we think of going further afield. We have a great Science Library in London. Its resources and its services are widely known and widely used. But I think it is common knowledge that the pressure of demand made upon it from all parts of the kingdom is placing a heavy and unfair strain upon it. The same, I think, may be said of the National Central Library in London, of Aslib headquarters, and indeed of many libraries and information centres of one kind and another in London. All those who have anything to do with library co-operation are agreed that it is in the interests of us all to strive towards what is called a greater degree of regional self-sufficiency.

Now, what have we got in Scotland in the way of agencies for providing scientific and technical literature and information? I have already referred to the wealth of material in our university libraries, and to the generosity of our universities in sharing that material with others. We have the great national collection in the National Library of Scotland, which has close on two million volumes, and which has the right by law to a copy of everything published in the United Kingdom, a right which it exercises selectively. It is stronger on the humanities than on the sciences, but among the 2,000 odd current periodicals which it takes, very many are devoted to science and technology. We have the public libraries, notably the libraries in our cities and larger burghs. This library, in which we meet, the Mitchell Library, has a first-class and widely representative collection of scientific and technical journals. I think it would come as a surprise to many of you to learn how diversified that collection is. In addition to periodical literature, the Mitchell Library sets out to add to its collection every important scientific or technical monograph likely to be of lasting value. There is also the well-known Glasgow Corporation Commercial Library, which concentrates on the provision of information for business men and industrialists. Those of you who work in or near Glasgow are fortunate in having this excellent library service within easy access. In our other cities, Edinburgh, Aberdeen and Dundee, are to be found public libraries with admirable collections of scientific monographs and journals—and the same can be said of the libraries in the larger burghs, though it is less true of our county library systems.

In a few minutes I should like to come back to our public libraries and to the increasingly important part they can play in the dissemination and exchange of scientific and technical information. But let me say something now about our special and technical libraries in Scotland. We have a fair number, some with great established collections, and others in the early stages of building up their collections. Many of these special libraries, I am glad to say, co-operate willingly with the Scottish Central

Library. These include the Royal Society of Edinburgh, which takes a remarkable range of British and foreign scientific periodicals. There are the fine collections in the libraries of the Royal Technical College in Glasgow, and the Heriot-Watt College in Edinburgh. Special collections are to be found in the Royal Botanic Gardens, in the Royal (Dick) Veterinary College, in the Macaulay Institute for Soil Research, in the Rowett Research Institute, in the Scottish Meteorological Office, in the Geological Survey, in the Scottish Seaweed Research Association, in the Institution of Engineers and Shipbuilders in Scotland, in the libraries of our Agricultural Colleges, in the Institute of Animal Genetics, in the libraries of Government Departments in Scotland such as the Department of Agriculture, the Ministry of Works, the Scottish Home Department, and in the institutions which they administer, such as the Marine Laboratory in Aberdeen. There are the splendid medical libraries built up and maintained by such bodies as the Royal College of Physicians and Surgeons, the Royal Medical Society, and the Royal Faculty of Physicians and Surgeons. There are the libraries maintained by big industrial organizations such as the British Aluminium Company or Ferranti, with whom we have a good deal to do.

These, ladies and gentlemen, are but a selection of the scientific and technical collections in Scotland, and I know each one of you could add to the list. There are dozens more—and I would like to think that someone would make it his business one day to find out more about them—particularly about the collections sponsored by private industrial concerns. There must be the most valuable material to be found in the research departments of our great Scottish ship-building, engineering and chemical firms—not to mention our distilling and brewing industries, whose products, I am told, are thought of very highly by connoisseurs in these matters. But the truth is that little is known about the scope and content of these collections. Probably some of these industries are represented here to-day, and I would like to appeal to industrial librarians to give a thought to this business of sharing their holdings—at least that part which is non-confidential—with fellow-workers in industry, science and in technology. Productivity, as I am sure Dr. Macrae will emphasize later this morning, is a matter vital to us in Scotland, and the pooling of documentation cannot fail to make a big contribution to that end.

How can we go about pooling our documentation with, of course, reasonable safeguards and limitations? Well, it seems to me there are various ways. Perhaps the simplest way is to ring up a fellow-member of Aslib and say, "You may remember that chat we had over lunch at the Aslib Conference in Glasgow . . . I was just wondering if you happen to have the December, 1952, number of such and such a journal and if you could lend it to me for a couple of days?" I am sure, indeed I know, that a good deal of that happens as a result of Aslib Conferences, and a very good thing it is too. But it is rather hit or miss. And I am sure we could go about this mutual aid somewhat more systematically. One way would be to take the lead given us by Aslib, and to take the initiative in forming little groups or 'cells' (I think this is the fashionable

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term) of librarians working in the same scientific or industrial field. One of the first things such a small group could do would be to prepare a union list of the periodicals which they take. I would very much like to see a union list of journals taken by, say, the leading ship-building interests in Scotland. I feel sure it would be a remarkable list and perhaps one without parallel anywhere in the world. Such a list would not only inform each librarian in the group of the others' holdings, but it would show up, firstly, some degree of duplication, on which savings could be made by mutual agreement; and it would show up, secondly, gaps which could be filled by mutual agreement.

A certain amount of co-operation of this kind has already been undertaken in Scotland. A good example is the scheme whereby the three important medical libraries in Edinburgh have worked together to systematize and rationalize their acquisition of periodicals, and also their purchase of monographs. There are perhaps others known to you which have not come to my own notice.

I have already tried to lay some stress on the value of co-operative lists of periodical holdings, and I think I ought to refer here to another recent and more ambitious project in Edinburgh. I have here a union list of some five thousand journals taken by eighteen libraries in the City of Edinburgh. This list was only completed and issued last week. To me, this is an important event, and indeed to anyone who is concerned with knowing 'who has what', this union catalogue is important. These 5,000 journals are not concerned only with science, but if I read the list of co-operating libraries, you will see that the emphasis is on science. The libraries involved are:

- Faculty of Actuaries
- College of Agriculture
- Royal Botanic Garden
- Royal Scottish Geographical Society
- Heriot-Watt College
- Edinburgh Mathematical Society
- National Committee for Training of Teachers, Moray House
- Royal Scottish Museum
- National Library of Scotland
- National Museum of Antiquities
- Edinburgh Public Libraries
- Royal Physical Society (housed in the Central Public Library)
- Royal College of Physicians
- Royal Society of Edinburgh
- Royal College of Surgeons
- Scottish Seaweed Research Association
- Royal (Dick) School of Veterinary Studies
- Edinburgh University Library

This catalogue is one substantial step forward in the recording of Scottish periodical holdings. The catalogue, useful as it is, is not, however, just an end in itself. The circulation of the catalogue is for the time

being restricted to the co-operating libraries. Each of these will scrutinize this list, and study particularly the degree of duplication which exists. They may say 'Is it really necessary for six libraries in Edinburgh to subscribe to such and such a specialized journal? If two of us discontinue our subscriptions, we will be able to afford to buy other journals which nobody so far is taking'.

The net result of all this will be considerable accessions to the range and variety of periodical literature in Edinburgh. This in turn will lessen the need for going outside Edinburgh for material, and will save time, a factor which we all know is of front-rank importance in this context. I am sure that if the compilation of similar co-operative lists were undertaken elsewhere in Scotland, it would be of the greatest benefit to research and productivity in Scotland. Whether these lists should be prepared on a basis of subject interest or on a basis of geographical propinquity is a question which you might wish to discuss.

A good deal of information on Scottish holdings of periodicals is, of course, to be found in such reference works as the *World list of scientific periodicals*, the third edition of which was published in 1952, and the *Union catalogue of periodicals in university libraries*, last published in 1937. The latter is now sixteen years out of date, and the *World list* does not pretend to be completely comprehensive. I have no doubt whatever that there are innumerable specialized journals taken and preserved by various libraries in Scotland—journals whose locations are not so far recorded in any key or union list. Can we tackle this whole problem systematically in Scotland?

Now let me turn from sources of literature to sources of information. All libraries are, all of us know, purveyors of information as well as literature, but there is one pre-eminent organization in Scotland whose business it is to supply facts and information on scientific and technical subjects, rather than to supply the literature of the subjects. I refer, of course, to the Department of Scientific and Industrial Research, whose Scottish headquarters are in Edinburgh. To give an adequate talk on the work of D.S.I.R. would take an entire morning, and in any case I am not qualified to do it. But no remarks on the subject of this session would be complete without some reference to D.S.I.R.'s activities in Scotland, and especially since the whole Aslib organization owes a great deal to the department both for financial aid and for inspiration. Furthermore, the work of the department is so vital to research in Britain that I feel no opportunity should ever be missed of publicizing its functions and activities, and stressing their great importance.

These functions are discharged in a variety of ways, notably through the department's own research organizations, which number fourteen. The largest of these, the National Physical Laboratory, is in Middlesex. The second largest, the Mechanical Engineering Organization, is in Scotland, at East Kilbride. We also have in Scotland five other D.S.I.R. research establishments. Three of them, the Scottish branches of the Building Research Station, the Fuel Research Laboratory, and the Road Research Laboratory, are at Thorntonhall, in Lanarkshire. There is

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branch of the Geological Survey in Edinburgh, and at Aberdeen there is the Torry Research Station, which is part of D.S.I.R.'s Food Investigation Organization.

These establishments are directly controlled and financed by the department but, as many of you know, D.S.I.R. also makes grants-in-aid to co-operative research associations which have been formed, and are controlled, by the industries themselves. Of these, one, the British Jute Trade Research Association, has its national headquarters in Scotland, at Dundee. At Galashiels there is a Scottish branch of the Wool Industries Research Association, and at Blantyre there is a Scottish laboratory of the British Cast Iron Research Association. These are, to the best of my knowledge, all the D.S.I.R. establishments in Scotland. I do not know whether it is planned to set up any more. I would like to think there will be more. It would be a great advantage to Scottish industry to have more of these experts near at hand.

Be that as it may, we are fortunate to have in the Edinburgh office of D.S.I.R. a channel through which enquiries can be made about, and the appropriate answers provided for, a tremendous variety of scientific and industrial problems, ranging from the bottling of pickles to supersonic aerodynamics. No problem is too minute for D.S.I.R.'s attention. Here is a quotation from the last Annual Report of the Department :

The elastic behaviour of toffee when cut and wrapped in modern high-speed machinery gives rise to certain defects in appearance. Studies of the effect of temperature and composition in the plastic properties of toffees have, therefore, been made with a view to overcoming this defect. The hardness of toffees, and other products, is of importance to their eating or chewing properties. A commercial instrument has been adapted for measuring hardness and should prove useful for factory control.

Just because this product happens to be toffee, that passage has a faintly comic ring, and I hope 'Beachcomber' never hears about it. But, the hard fact remains that a satisfactory solution to that particular problem may well affect a big manufacturer's turnover by thousands of pounds.

I am not going to attempt to describe the full range of D.S.I.R.'s activities. But I do want to single out three of their projects which I think will specially interest this audience. First of all, how many of you are familiar with this excellent reference work issued by D.S.I.R. a few months ago ? It is called *Scientific research in British Universities, 1951-52*, and is published by H.M.S.O., price 8s. 6d. This work gives a mass of information on research projects, well over 2,500, I should guess, undertaken in the 1951-52 session by teams in the scientific departments of British universities and colleges. I should say that every scientific research organization in Scotland would do well to examine this work and learn for itself whether anything interesting or valuable in its field is included. Why should your research department embark on an expensive and protracted study, if it has already been tackled elsewhere ? The sections

dealing with original research projects in the Scottish universities have, of course, a special interest for us, since they include studies relating especially to Scottish natural resources and industries.

The second D.S.I.R. activity I would like to mention particularly is its Technical Information and Documents Unit, which time and time again proves to be the only agency in the country which can produce information on overseas research and industrial processes. This unit, T.I.D.U., possesses a vast amount of technical data unearthed by British investigating teams in Germany after the war. All these ex-enemy technical and scientific secrets have been carefully sifted and summarized, and already they have made their impact on various British industries, for example, those concerned with metallurgy, ceramics, dyestuffs, steel manufacture, etc. Over and above this rich and still largely unexploited mine of ex-enemy technical data, the T.I.D.U. acts as a clearing-house for the receipt and dissemination of scientific and technical literature published by the eighteen countries which are members of O.E.E.C., the Organization for European Economic Co-operation. As T.I.D.U. itself says, 'there is a feeling that industry as a whole could make wider use of its rich store of technical research'. I would like to think that Scottish organizations are not backward in taking advantage of T.I.D.U.'s unique and invaluable services.

The third D.S.I.R. activity, which I only wish to mention briefly, is its *Translated contents list of Russian periodicals*, which is not as widely known as it ought to be. It is commonly believed that very little information gets through from the other side of the Iron Curtain, but D.S.I.R. manages to present to us a surprising amount of data on Russian scientific research, through the medium of this monthly publication.

The trouble, ladies and gentlemen, is that there must be throughout Scotland hundreds of small industries and manufacturing firms with technical and production problems, who are quite vague about how to go about getting the answers. In this matter, D.S.I.R. believes that our public libraries can, as I said earlier, play an increasingly important part. The public libraries are visited regularly by millions, and it is these libraries which can act as the catchment area, so to speak, for individuals and the owners of small businesses who need advice. If the library cannot provide the answer itself, it should know where there is a good chance of getting it.

There is much to be done yet, and the three desiderata which I see are : (1) a comprehensive and thorough survey of special collections in Scottish libraries of all kinds, including the collections in industrial establishments ; (2) union lists of periodicals which can eventually be combined to form the basis of a Scottish Union Catalogue of Periodicals ; and (3) the utilization of every means possible to gear the Department of Scientific and Industrial Research to the promotion of Scottish productivity.

THE SCOTTISH COUNCIL AND ITS WORK

By C. MACRAE, D. PHIL.

Secretary of the Scottish Council (Development and Industry)

Glasgow, 27th February, 1953

I AM confronted with what is really an impossible task. I have been asked to tell you about the Scottish Council, but even if I had as many hours at my disposal as I have minutes it would still be difficult to tell you all there is to tell about this unique and well-doing body whose servant I have the honour to be. In the half-hour at my disposal I can only touch in the briefest outline upon a few of the main features of the nature and work of the Council.

The Scottish Council exists for the purpose of promoting the economic welfare of Scotland. The present organization was based on a merger, which took place in 1946, between two older bodies, the Scottish Development Council and the Scottish Council on Industry. The Scottish Development Council was established in 1931 with the primary object of combating the heavy unemployment then prevailing in Scotland. It did a great deal of excellent work, including the foundation, in conjunction with the Commissioner for Special Areas, of the first Industrial Estates in Scotland and the staging of the British Empire Exhibition in Glasgow in 1938. The Scottish Council on Industry came into being in 1942, largely on the initiative of The Rt. Hon. Thomas Johnston, then Secretary of State for Scotland. At that time the great bulk of war industries had been located in the South, civilian industries were being concentrated and Scottish workers were being forced to leave Scotland in very large numbers to enter the Forces and to man factories in the Midlands of England. Mr. Johnston felt the need for a body, representative of all interests in Scotland, to advise him as Secretary of State on industrial questions so that he could take timely action to protect Scottish interests and to endeavour to secure for Scotland a fair place in the war-time economy of the country. After the Council on Industry was established the tide was turned and an ever-increasing flow of production was directed to Scotland. Many of the new factories which were then established have remained with us and are making an important contribution to our industrial well-being.

The Scottish Council is directly representative of the Scottish local authorities through their three Associations, the Convention of Royal Burghs, the Association of County Councils in Scotland, and the Association of Counties of Cities in Scotland; the Scottish Chambers of Commerce, through the Central Committee of Scottish Chambers of Commerce; the Trades Unions, through the Scottish Trades Union Congress, General Council; and the Banks. All of these are also directly represented on the Executive Committee of the Council. Membership of the Council is open in addition to trade associations, firms, co-operative

societies, trades councils, corporate bodies of all kinds, and private individuals. These sections of the Council's membership are also represented on its Executive, which includes in addition three members directly nominated by the Secretary of State for Scotland. This wide and representative membership enables the Council to speak for the whole of Scotland, and it can claim that its unanimous recommendations, when they have the backing of its constituent bodies, have the united weight of Scottish public opinion behind them.

The Council is strictly non-political. It co-operates with Government Departments, with its own constituent bodies and with other agencies in promoting the well-being of the Scottish people, but it is, nevertheless, completely independent and it is always prepared to press for legitimate Scottish interests without bias and without subjection to any outside influence. In order to safeguard this independence the Council derives its income exclusively from Scottish voluntary sources.

The Executive Committee of the Council, which is the governing and policy-making body, is advised by several highly qualified standing committees. We have, for instance, an Industrial Committee dealing with problems of industrial development, a Research Committee charged with the duty of promoting scientific and industrial research, a Building Materials Committee whose task it is to secure the increasing utilization of native materials in the building industries, a Mineral Resources Panel which is engaged upon the promotion of economic utilization of Scottish natural resources, a Chemical Committee dealing with the chemical industries, a Transport Committee, a Public Relations Committee, and an Exhibitions Committee, whose functions are sufficiently indicated by their names. In addition to these standing committees *ad hoc* committees are set up from time to time to investigate and report on particular problems or possibilities of development. We have already published a very large number of reports by committees of this nature.

I think that the great strength of the Scottish Council is that it is able to draw on the best brains and experience of Scotsmen at home and abroad. A very great amount indeed of voluntary service is given by industrialists, trade unionists, bankers, scientists, and professional men who are enabled through the organization of the Council to focus their experience and knowledge to the benefit of Scotland's industrial present and future. If we were to compute the cash value of the services voluntarily given to us on any single day the resulting figure would be staggering.

The Council, however, operates not only in Scotland. We have agents and correspondents throughout a large part of the world, and the Council maintains organizations of its own in London, the United States and Canada.

These organizations take the form of secretariats supported and advised by Committees consisting of Scotsmen eminent in industry and public life. These Committees are accordingly in a position not only to supply valuable authoritative and up-to-date information, but also to bring very potent influence to bear at the highest levels of industry and public life

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in the countries in which they are respectively domiciled. The external organizations and agents of the Council are particularly useful in assisting in the promotion of Scottish export trade and in the attraction of suitable new plant investment to Scotland.

The general objective of the Council is to do everything possible to promote economic well-being and economic expansion in Scotland. In particular it has carried out and is continuing to carry out very extensive and energetic activities aimed primarily at the following :

(1) Assisting existing industry to overcome problems and difficulties and to progress both in existing and new fields of production ;

(2) Seeking to ensure the highest possible measure of efficiency in the basic services on which industry depends ;

(3) Initiating and fostering the growth of new industry in Scotland and the attraction, where necessary, of suitable new industry from outside ;

(4) Expanding Scotland's export trade, particularly by finding new outlets abroad for Scottish goods and assisting Scottish firms to exploit them ;

(5) Ensuring that Scotland receives a fair share of all Government expenditure and work ;

(6) Promoting where physically and economically possible the further utilization of Scottish natural resources, both mineral and vegetable ;

(7) Publicizing Scotland and Scottish capabilities throughout the world.

I can give only a few very sparse indications of the methods by which the Council endeavours to achieve these objectives. A very large part of the Council's effort is directed towards the betterment of the existing industries. In our offices in Scotland, London and overseas we provide a free service for existing firms and the Council is always prepared to deal with any problem or any proposal for development that may be laid before it and to carry through each individual case to a successful conclusion if it be humanly possible to do so. In a wide variety of ways we assist existing industries to overcome their difficulties, to map out the best lines of new development, and to make the fullest use of all opportunities. We take action to resuscitate industries which have been declining whenever resuscitation is economically possible. At the other end of the scale we do our utmost to help those industries which have obvious opportunities of expansion and progress to make the fullest use of these opportunities. We are always on the alert to obtain new work for existing firms. For instance, we have been active to secure for Scottish industry a fair share of the current rearmament programme and also of the contract requirements of the American Forces in Europe. Along with the Economic Co-operation Administration, now the Mutual Security Agency, we devised and are operating with a great deal of success a scheme for facilitating the placing of Production Under Licence between American

and Scottish firms. We have been and will continue to be active in the important field of industrial efficiency. The Council was instrumental in securing the establishment of two Management Associations in Scotland, one for Glasgow and the West and the other for Edinburgh and the East. We were able to induce the Royal Technical College, Glasgow, to undertake courses in works study and various other aspects of productivity which have been conspicuously successful. We have taken action to drive home and to secure practical results from the reports prepared under the auspices of the Anglo-American Council on Productivity. Similarly, we have devoted much thought and effort towards improvement of the essential services such as transport in all its forms on which industry depends.

Important and valuable as are our existing industries, which must be in the foreseeable future the foundation of our prosperity, it would be unwise to let our future rest on them alone. We must progress; we must supplement our existing industries, diversify our economy and make sure that the vast new growths of the future will not pass us by. The Scottish Council has spread out its tentacles throughout industry in this country, in the United States, in Canada and in other parts of the world with the object of learning at the very earliest stage of any proposal for expansion by any good firm. Then, if the proposed expansion is suitable for Scottish conditions, we immediately enter into negotiation with the firm and use the many valid arguments which are at our disposal and the many highly important contacts we enjoy throughout the world to persuade them to set up their new development in Scotland. Indeed, we go even further in that both at home and through our overseas organizations we keep in touch with major and important firms whether or not they are known to be contemplating any immediate new development so as to interest them in Scotland and make sure that Scotland will be very much in their minds when their next expansion takes place. In all this fishing for factories a remarkable degree of success has been achieved.

Since 1945 more than 1,500 new industrial undertakings or expansions have been launched in Scotland, including at least 500 new factory buildings or factory extensions of 5,000 sq. ft. and over. These new undertakings already provide employment for something like 114,000 people, and when they are fully developed it is estimated that they will employ up to half as many more. Among the things they produce are petrol, diesel and electric engines, radio and electrical devices and appliances, articles of domestic and personal use such as refrigerators, kitchen equipment, vacuum cleaners, electric shavers, clocks, typewriters, cash registers and other office necessities, die castings, light alloys, aluminium sheets and hollow-ware, prefabricated houses, ball and roller bearings, condensers, agricultural machinery, glass containers, bottling machinery, photographic equipment, scientific equipment, highly important chemicals, electronic devices, radar equipment, and other products. These new production units are operated by Scottish, English, Continental and North American firms. It is particularly noteworthy that

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of the new factories started in the United Kingdom since the war by United States and Canadian Corporations over 50 per cent. are located in Scotland.

It has not been our objective to attract any and every industry to Scotland. Scottish resources, human and otherwise, are limited, and it is necessary, therefore, to use them to the best advantage. In attracting new industry to Scotland it has always been the aim of the Scottish Council to secure those which would make the maximum contribution to existing needs, including the needs of the established industries, and to future growth.

In addition to attracting new individual production units to Scotland we have also been creating, mainly on the basis of adapting or extending existing capacity, entire branches of modern and progressive industry in which Scotland has hitherto been deficient. The industries we have been building up in this way include, for instance, agricultural machinery, which is a highly important engineering industry in itself and is doubly important as serving the basic production of all, agriculture ; electronics, which is one of the newest but already the largest single industry in the world ; chemicals, an industry which doubles itself in size every five years and which is always throwing out new off-shoots which rapidly develop into great new industries themselves ; precision engineering ; industries associated with atomic energy, and others. The methods we adopt vary from case to case and it would take a long time to give even the briefest account of them all. The general pattern is to ascertain the conditions in which these industries can develop ; having ascertained them, to create them ; having created them, to attract appropriate existing and, where necessary, new firms into this field ; to give them the necessary help in building up research and design teams and all necessary facilities ; to obtain contracts and particularly Government contracts for them ; and to help them at every stage to become fully competent, qualified and versatile in the new field.

Even more important, however, than the creation of new industry in Scotland is the generation of the conditions within which new industries grow and will continue to grow progressively in the future. In modern conditions by far the most important source of new industry is scientific research. The industries of to-morrow are ideas, perhaps still dormant ideas, in the brains of the scientists of to-day. Scotland has in the past produced excellent scientists and engineers, but most of them have had to go to other countries in search of employment. This is now being rapidly changed. For several years we have been pursuing the most active and widespread measures to increase the practice and application of scientific research in Scotland. In this field the influence of the Government is of vital importance, since the Government employs approximately half of the research effort of the country at the present time. We were able to secure acceptance by the Government of our case that more of its research institutions and contracts should be placed in Scotland and the first fruit of this policy was the establishment at East Kilbride of the Mechanical Engineering Research Laboratory. The Government Departments, and

particularly the Ministry of Supply and the Department of Scientific and Industrial Research, have been co-operating most helpfully with us in placing research based contracts in Scotland and in building up the capacity to undertake them.

If we are to make the most of our conditions we must make the best possible economic use of our natural resources. Far and away the most important mineral which Scotland produces is coal. Coal is still the backbone of our economy, but our resources, though good, are not inexhaustible, and we must in the future use our coal more economically than we have done in the past. We must try to reach the stage of obtaining from each ounce of coal not only its full thermal value, but also all the valuable by-products which it contains. The Council has sitting at the moment a Committee which is considering the future pattern of power supplies in relation to industrial location. The findings of this Committee should give a most valuable guide for the optimum siting of major power-using industries in the future.

One of the Standing Committees of the Council, the Mineral Resources Panel, is investigating Scottish minerals other than coal with a view to securing their utilization whenever this may be economically possible. The usual sequence is first of all to ascertain the extent of a deposit, then to test its value for industrial purposes, then to examine the economics of using it and, finally, if all these are favourable, to seek a suitable *entrepreneur*. Some Scottish minerals which formerly lay dormant, such as Lochaline silica sand, Skye diatomite and Skye quartz, are at present being used industrially. Others which are at present being examined include dolomite, talc and peat. Another of our Committees, the Building Materials Committee, is, as I have already mentioned, at work on materials required for the building industry. A report, prepared for this Committee, was responsible for the resuscitation of the Scottish slate industry after the war and much valuable work has been done on Scottish limes to prove by rigid tests their suitability for industrial use. We are also actively endeavouring to increase the output of cement in Scotland.

Vegetable as well as mineral resources are, of course, receiving attention, and rightly so. Our forests have been depleted by two world wars, but preparations are well advanced for starting important pulp and chip-board industries in Scotland whenever sufficient timber becomes available. The Scottish Seaweed Research Institute, which was set up by the Scottish Council on Industry, the predecessor of the present Council, in association with the Government Departments concerned at the end of the second world war, has carried out a most extensive programme to ascertain the extent of Scottish seaweed resources and to evolve methods of continuously harvesting seaweed in sufficient quantity and sufficiently economically to support a large-scale processing industry.

The question of area development is one in which the Scottish Council takes a strong interest. Meetings are held periodically with local authorities and other responsible bodies to discuss local problems and prospects for development, and action is always taken afterwards to try to realize in practice the fulfilment of any good possibilities which emerge. In

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cases where there is a more serious problem technical surveys are undertaken in order to ascertain the best means of overcoming the difficulties of a particular area and of making the best use of its resources. One such survey of the Moray Firth Area enabled us to establish a progressive new fruit growing industry there. An exhaustive investigation of the Border Counties has just been concluded and a report on unemployment in Aberdeen and the surrounding district was published a few months ago and resulted in the designation for special treatment of an area around Buckie and Peterhead. Last year we published the Report of the Cairncross Committee on Local Development, which recommended certain changes in Government policy for the location of industry. In order to follow up and secure further practical results from the work already done in this field, as well as to guide and expand our activities in this direction in the future, a highly qualified Committee is at present in course of appointment to deal with problems of area development throughout Scotland.

Scotland is part of an island with good sea routes to the surrounding continents ; she is also a highly industrialized country requiring far larger markets for her products than her own population can afford. It is natural, therefore, that Scotland should be an exporting country and, in fact, she has always exported proportionately more than the United Kingdom as a whole. In present circumstances, as we all know, it is necessary to increase our exports still further.

A very large part indeed of the effort of the Scottish Council is directed to the promotion of exports. Assistance of every kind is given to any exporting firm or any firm wishing to enter the export market which approaches us with its problems or plans, and scores of them do so every month. We are ready to give them help of any kind whatever, even to obtaining actual orders for their products which we are able to do through our contacts, both directly and by means of our overseas organizations and agents, with stores, buying agencies, import houses, and the business world generally. Conversely, we receive continuously enquiries from abroad for goods which are produced in Scotland, and these actual or potential orders are brought to the notice of the appropriate Chambers of Commerce, trade associations or individual firms. We take great pains to bring to Scotland as many foreign buyers as we can, and when we get them here to make it as easy for them as possible to get what they want. For this purpose appropriate literature is produced, such as the *Buyers' Guide to Scottish Industries*, which gives a list of every Scottish manufacturing firm employing more than a dozen workers, with details of the products of each of them, the whole classified according to their respective industries. We are constantly sending trade missions abroad or bringing important business men, statesmen and other responsible persons from other countries to Scotland, and in this way, as well as through our overseas organizations, we are enabled to keep in touch with market conditions and opportunities overseas, and to pass on to Scottish industry information about the export possibilities which are open to them and advice as to how these opportunities can best be exploited. We are

always vigilant to remove any obstacles which are impeding the export efforts of individual industries or individual firms, and we are ever watchful to try so far as lies in our power to prevent anything being done in other countries, as, for example, by false trade descriptions, which would endanger in any way the Scottish reputation for quality production.

If you are going to sell goods abroad you need the goods to sell and they must be the right ones ; you need the organization for selling them ; and you need salesmanship. Salesmanship involves publicity. A sustained effort has been made and is continuing to secure for Scotland publicity of the right sort by literature, radio programmes, newspapers and magazine articles, and in many other ways. Then, of course, there are exhibitions. We have always encouraged and assisted Scottish firms to take part in exhibitions overseas. In 1949 we ourselves staged an exhibition in Glasgow, at which the orders revealed by participating firms as having been placed during the period of the exhibition itself amounted to more than £10 million. There were further orders which were not revealed and, of course, the consequential orders would amount to a very much larger figure. A further exhibition of the same kind is being held in 1954, and no effort will be spared to make it as much of a best seller as its predecessor.

There is very much more that I should like to tell you about, but my time has run out. Perhaps what I have said will indicate to you some of the ways in which the Scottish Council is endeavouring to promote the economic well-being of Scotland. This, at any rate, is an objective which I feel sure will have your commendation and your support

SETTING UP A SMALL SPECIAL LIBRARY

BY JAMES REVIE

British Jute Trade Research Association

Glasgow, 27th February, 1953

IN MANY relatively small industrial firms—and sometimes even in larger concerns—there comes a time when the boss looks round at the motley collection of books, periodicals, pamphlets, catalogues, etc., which have accumulated more or less haphazardly in various corners and other situations in his office, and says to himself, usually after he has failed to find some particular item of information which he knows is somewhere in the collection, 'I think I'll put somebody on to looking after this stuff'. He then sends for his typist and says to her, 'Miss Smith, I want you to look after all the books we have, and all those journals and pamphlets and things that keep coming in'. And so another small special library is born.

Miss Smith is, of course, not a trained librarian, but she need not despair at that. She has that other—and perhaps more valuable—asset for the guardianship of a small special library, namely, intelligence, which she has no doubt ably demonstrated with regard to many of the communications which have passed through her hands.

For the purposes of the present paper then, Miss Smith is intelligent, and we shall further assume that the library and information service which she is to set about instituting will be intended to serve a small group of technicians among the staff and also perhaps to have some dealings with outside individuals, such as customers or other user interests. If in the course of suggesting some pointers with which Miss Smith's path may be signposted I expound some simplicities, or even advance some heresies, I would remind the experienced librarians present that a purely imaginary set-up is being envisaged with a view to the presentation of some simplified library techniques, which may not necessarily be in operation, either singly or in combination, in any established special library. Further, for convenience, I shall hereafter refer to Miss Smith as the librarian.

Few small special libraries start completely from scratch, and the miscellaneous matter which has initially to be taken over can, mentally at least, be divided into two broad categories, namely (1) non-periodic matter and (2) periodic matter. Let us consider the various items that make up these groupings, taking non-periodic matter first.

NON-PERIODIC MATTER

Non-periodic matter consists of items not issued at regular intervals, such as books, reprints, photostats, patent specifications, standard specifications, pamphlets, brochures, trade catalogues, etc. The entering of all such items into the librarian's custodianship, either through taking

over an existing miscellany or by means of subsequent acquisitions, should be recorded, or to use the technical phrase, each item should be accessioned.

Accession Register

Here we come to the first firm foundation of the small special library, namely the accession register, and to the avoidance of some common pitfalls in laying it. The accession register is a highly important item in the small library, and it merits a fair amount of time being spent on its explanation at this stage. I shall take the pitfalls first.

Do not allow the accession register to become plural, that is, do not have separate registers for books, for patents, for reprints, or for any of the other subdivisions of non-periodic matter. And do not be tempted into using the ledgers or folios or whatever they are called which are so easily obtainable from any stationer's stock. For ease of consultation and other reasons which might emerge from subsequent exposition it is desirable that the recording of each accession should occupy only one single line of the register, and the ordinary ledger pages are not wide enough for this.

The normal foolscap-size ruled paper sold loose in folded form is a very satisfactory medium for building-up an accession register. This type of paper opened out flat and suitably ruled and headed can accommodate all the really vital data which require to be recorded for each accessioned item, and has the great advantage of being very easily obtainable. With holes punched in it by the ordinary office punch, as in the filing of letters, etc., this paper needs only to have a suitable holder, which any good stationer can supply to order, to provide a very suitable accession register in a convenient loose-leaf form.

The data to be included in the accession register are denoted by the column headings, which are (1) Accession number, (2) Classification, (3) Date of receipt, (4) Type, (5) Size, (6) Title, (7) Author or source, and (8) Method of acquisition. Let us consider the headings *seriatim*.

THE ACCESSION NUMBERS are entered in column 1, and in the small library can be purely cumulative, i.e. they can run on irrespective of the type of matter being accessioned. Column 2 is for the CLASSIFICATION symbols, or class numbers, used to denote the subject classifications of the items accessioned, and column 3 is for the DATES OF RECEIPT of the items into the library.

Then we come to column 4, headed TYPE, meaning the type of publication being accessioned, and a word or two of digression to explain this heading may be in order.

Most non-periodic items, but not all, can be regarded, as far as form is concerned, as falling into a number of arbitrary but distinct types, which for convenience in consistent designation in the TYPE column may with advantage be listed on a slip pasted inside the front cover of the register.

The first on the list is books, which for the purpose of accessioning—and also positioning, which I shall come to later—in a small library can be defined as bound individual publications of any sort (apart from bound

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volumes of periodicals) which are lettered on the spine and are fit to stand on a shelf. The standard designation used in the TYPE column for publications fulfilling these conditions could be the capital letter T, and this is duly noted on the permanent slip pasted inside the cover, for reference. And so on for the other non-periodic matter listed.

To return to the headings in the register, after the TYPE column comes column 5, designated SIZE. The information in this column, in conjunction with that to be obtained from the TYPE column, will be found to be of assistance if ever a real search has to be made for a particular item sometime in the future.

Then we come to column 6, headed TITLE, which means just what it says, namely the title of the accession. In some cases, however, as we all know, the title of an article gives no clue as to the subject matter dealt with, and in these instances use can be made of the convention employed by abstractors in such circumstances, namely to interpolate an indicative word or words enclosed in square brackets. Where the title is very long, only the gist of it need be entered, dots being used to indicate the parts omitted.

Column 7, AUTHOR OR SOURCE, is an important one, for on it depends to a large extent the excellence or otherwise of the author catalogue. On occasions, of course, perfectly useful information which has no designated father will require to be accessioned, and I would go to great lengths to find godfathers for such items. For instance, in the case of an anonymous reprint, as a last resort I would use the name of the journal from which the article was taken as a source.

Always the librarian should be on guard against the scattering of information in the catalogue, and although this may not be quite such a serious danger in author cataloguing as it is in subject indexing, nevertheless it is a very real one. To avoid this, consistency must be maintained in, for instance, the designation of Government departments, and the abbreviation of names should be shunned like the plague. It may be quite permissible to talk of D.S.I.R. or I.C.I. in conversation, but in the author or source column of the register such sources must be given their unabbreviated titles on every occasion.

The final column, METHOD OF ACQUISITION, shows the sum paid for a particular item, or whether it was gifted by Mr. So-and-So, or obtained free. Among the uses of this column, therefore, is that from it the librarian can give a financial evaluation of her stock at any given time.

Building-up the card indexes from the accession register

The first, but by no means the only, use of the accession register is to make up, from the entries recorded in it, the author or subject cards which will form the card indexes to the library non-periodic holdings, the register entries being suitably ticked to denote that this has been done.

The standard 5 × 3 cards are suitable for this, as we are considering, we must again remember, the needs of a small library, and the information on the cards will, from considerations of labour alone, be the minimum required. A routine of the positioning of this minimum information on

the cards is desirable. Both the author and the subject card require to have on them the classification symbol for the item recorded, together with the accession number (these being conveniently presented together in the form of a fraction), the title of the publication, and the name of the author. On the author card the author's name takes precedence over the subject and can be further emphasized by being typed or written in capital letters, while on the subject card the subject would take precedence and could be similarly emphasized.

Colour differentiation of the cards according to the type of publication to which they refer will be found helpful, but should not be overdone. Differentiation of the text-books by, say, the use of pink cards, and of trade catalogues by the use of, say, green cards, may well be found sufficient in this respect, the ordinary white cards being used for all other types of publication.

All the cards are then put away in their separate author and subject cabinets, the author cards being arranged alphabetically and the subject cards being arranged in accordance with whichever classification symbols are adopted.

Recapitulation of accessioning procedure

From what has been said, plus the interpolation of sundry details, a routine of accessioning can now be enumerated :

(1) The items being accessioned are marked with their respective subject classifications, in suitable positions.

(2) The necessary details regarding the items are entered in the accession register. The accession number for the items now being known, this is marked on the publication, immediately under the subject-classification symbols, a line being drawn to separate the subject symbols and the accession numbers.

(3) The items are stamped with the library stamp, denoting that they are duly accessioned library property, and are then stored.

(4) Author and subject cards are made out for each item, from the information contained in the accession register. This step, of course, need not necessarily follow immediately, that is as far as time is concerned, after the other steps.

(5) The author and subject cards are placed in position in their respective cabinets.

Storage

Now as regards storage. I use the word storage merely from the point of view of convenience, as the publications are not really stored but are merely positioned in locations where they will be handy for their use.

Storage of text-books, these conveniently formed entities, is easy, as, according to the definition, these are lettered on the spines and are fit to stand on a shelf. They must, however, stand on the shelves in a pre-arranged order, and for the small special library where the chief users are internal members of the staff, positioning of the books in accordance with

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order of accession number has the advantage of simplicity. Moreover, the first situation of each book is its final situation and users will thus find themselves unconsciously becoming familiar with the locations of the most frequently consulted volumes and will go straight to them. Arrangement of the books according to subjects usually entails either shifting the positions of other books to allow the new accession to be placed among others in its subject grouping, or else leaving spaces for potential future accessions, thus inhibiting full use of the probably already limited shelf space which will be available. Positioning by accession number means, of course, that the numbers must be clearly marked on the spines, either by means of an electric stylus or by an adhesive label, in addition to the normal library markings inside.

A satisfactory arrangement for the storage of the main run of non-periodic matter, apart from books fit to stand on a shelf, is provided by the use of ordinary office filing cabinets of the size designed to take foolscap-size paper lying on its side, but do not use the suspension type of filing cabinet for this.

A large amount of the type of matter we are now considering will be in the form of more or less loose sheets, and if such accessions are stored in the filing cabinets in their as-received condition, future handling will soon reduce the contents of the cabinets to a mess of dog-eared paper. A neat and inexpensive way of getting round this is for the office staff to preserve any fair-sized envelopes—and especially foolscap and quarto envelopes—which have carried incoming letters, etc., through the post, these envelopes being subsequently used by the librarian to contain the individual loose-matter accessions stored in the filing cabinets. The accession and class numbers and the title and author of the item contained is, of course, written on the outside of the envelope, in a suitable position, that is, in a position suitable in respect of the way the envelope will lie in the filing cabinet.

I have advised against the segregation of different forms of accessions as far as accession registering is concerned, but storage of the actual accessions themselves is a horse of a very different colour, and some types of publications lend themselves very readily to segregation in storage. Patent specifications, for instance, can be stored in the well-known type of transfer case, in order strictly of patent number. If various types of patents specifications are received, that is, specifications from various countries, methods of subdivision for storage will readily occur to the librarian. For instance, the patents can be suitably subdivided within the transfer case by the use of manila pockets bearing, in numerical order, the numbers of the patents they contain.

Another type of publication which lends itself well to the same treatment as regards storage and arrangement is standards specifications, but beyond this point I would again be chary of the principle of segregation. As has been indicated, the two types of accessions I have just mentioned are issued in a uniform size and bear specific numbers, and I would confide segregated storage to items similarly published, with the exception perhaps of matter coming from a particular institute or other organization

with which the librarian's firm may have very close associations, and, of course, our old friends the trade catalogues. These deserve a paragraph to themselves.

Trade catalogues, I think, should be stored in filing cabinets, again using old envelopes for containing any loose-leaf items. You may have noticed that so far I have ducked at any hint of the problem of how to arrange the ordinary run of non-periodic accessions *within* the cabinets, but in the case of trade catalogues this bogey can be laid right away. File them in strict alphabetical order according to the name of the firm making the product dealt with. Note I say *making* the product, not supplying it, which is sometimes a different thing.

As regards the arrangement of the other non-periodic matter within the cabinets, I have toyed with the idea of doing this strictly in accordance with order of accession number, as I have suggested for the arrangement of books on the shelves, but I have, and I think rightly, discarded this notion without trial, for reasons which will no doubt be evident on consideration but would take too long to discuss.

The only exception to this is with regard to items of ephemeral interest which have been weeded out from the main files when their period of topicality is past, but which might still conceivably be asked for on occasion. Such items can be conveniently packed away as 'reserve stock', strictly in order of accession number, after they have been duly stamped RESERVE STOCK and the same stamping has been made on the enclosing envelope, if there is one, on the subject and author cards for the item, and on the line occupied by its entry in the accession register.

In the interests of storage space the destruction of some accessions which appear to be of no further use may be called for, but such destruction should be embarked upon with the greatest caution, as destruction of an item is, as we all know, almost invariably followed by someone putting in a request for it. However, if the items for the waste-paper basket are selected from those which have already languished in reserve stock for some time the chance of such unfortunate requests may be to some extent minimized. On the destruction of an item, notice to that effect should be entered on the subject and author cards and again on the appropriate line in the accession register.

Apart from books, trade catalogues, and other exceptions mentioned, I think that the primary arrangement of stored non-periodic matter must be by classification number. Which raises the question of classification in general. No doubt you have all been waiting for it, and here it is.

Classification

Our imaginary neophyte librarian, Miss Smith, having been more or less pitchforked into the custodianship of published and unpublished information, has, of course, no detailed knowledge of classification systems, apart perhaps from the purely arbitrary labelling of certain office files as 1A, 4L, etc. She is, however, as has been stated, an intelligent girl, and in her period of service as a typist in the firm has become familiar with various technical concepts which keep recurring in connection with its

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activities. She feels confident that she can draft a classification system for such concepts, based on 1A's, etc., and no doubt she can, but, like most special librarians, she will find that her library will be called upon to store—and catalogue—data on shoes and ships and sealing wax, and cabbages and even kings. The drafting of all the classifications required would be beyond her capacity, from the point of view of time alone, and she would be well advised to adopt one of the ready-made comprehensive classification systems available.

I would suggest the use of the U.D.C., that is, the Universal Decimal Classification, in this connection, not from the point of view of the usual claims which are made for it, but because the lists and tables are so easily obtainable in this country, and because a broadly similar system may be seen in actual operation in most public libraries. One advantage of adopting the U.D.C. system is that she will henceforth never be lost for a topic of conversation wherever one or more other librarians are gathered.

So our new librarian writes to the British Standards Institution, in London, and obtains the requisite editions of the U.D.C. system. What then? Well, she leaves the editions on her desk unopened and goes to her nearest public library, which, as has been indicated, she will probably find is operating a broadly similar decimal classification.

At the public library she will see a counter at which assistants will be engaged dealing with the day-to-day loan transactions of a public library. Having noticed the assistants, she keeps clear of them, as they will be too busy for her purpose, but she will no doubt see another, and higher, library official somewhere in the offing. She approaches him, and tells him that she is interested in the classification system used, and would like to know more about it. After the library official has recovered from the shock of a member of the public expressing some interest in the classification system employed, our Miss Smith will undoubtedly find him very willing to explain the rudiments of the decimal classification. On this and future visits to the library she can develop an acquaintance with the system, the author and subject cards, the printed catalogue, and the general feel of information being arranged in a fairly logical sequence of subjects. If, in addition to this, Miss Smith could arrange to spend, say, a week or more in a special library as an observer of the routine, such an experience would be of the greatest value, and, librarians being the highly co-operative group of people that they are, such extended visits are easier to arrange than might at first sight seem possible.

She can then open her U.D.C. books and read the introductions, especially those to the Class O section of the English Edition and to the complete Abridged English Edition. She is then ready for the best method of learning the U.D.C. system, namely by operating it. Of course she will make mistakes, but if all her early attempts at classification symbols are written in pencil in every situation where the classification symbol appears, namely on the accession itself, in the accession register, and on the subject and author cards, these initial mistakes will be easily remediable as her knowledge and experience of the classification system

grows, but, of course, she must remember that any corrected item will have to be amended in each of the locations where it appears.

Right from the start she should studiously avoid the scattering of information, and to this end a little card index of the classifications which she has used for particular accessions, arranged in alphabetical order of subjects, will prove invaluable in ensuring that future accessions relating to the same subjects will finish up in the storage files alongside related earlier accessions. I have said a little card index, and I meant little. It will be surprising to note how relatively few cards will be required for this purpose in a small library, as the same main concepts will be found to recur again and again.

Most of the U.D.C. numbers for broad concepts in general will be readily found on consulting the alphabetical indexes appended to the various subject sections of the U.D.C. publications. Another useful alphabetical index of U.D.C. numbers is available in a little handbook published by the Department of Scientific and Industrial Research as a brief guide to some of its activities. The published indexing of the periodical *Endeavour* according to the U.D.C. system is a real *tour de force* and will prove of great help, both as an example of the U.D.C. system in practice and because the alphabetical classifications for the symbols used are also given. But please remember never to classify direct from indexes alone, but to turn up, in the main sections, the number indicated by the index, and see that the heading under which the number appears in the main tables is in accordance with the particular concept of the item which is being classified.

In general, I would strongly advise the Miss Smiths to keep their U.D.C. classifications as simple as possible, by avoiding the use of many of the seemingly complicated auxiliaries such as the hyphen, the shilling stroke, the inverted commas, etc. Indeed, I think that the accessions in a small library could be sufficiently classified by the use of no other punctuation auxiliaries than the full stop, the colon as a sign of relation (a very useful one), and the brackets as a sign of geographical location. In this I am supported in spirit, if not to the letter, by the introduction to the Class O section of the English edition.

I will leave this brief dissertation on U.D.C. with a word of final advice. Be consistent in the classifications used; in my opinion it is better to be consistently wrong in a particular aspect than to be wrong some of the times and correct at other times, thus leading to scattering of information.

PERIODIC MATTER

Periodicals are not accessioned, in the sense that this word has been used for other matter, but the fact that they have been received into the library should be recorded. All the requisite information with regard to the periodical holdings can be entered and filed on the type of cards used in the well-known flat visible-index systems, one card being sufficient to contain all the necessary data for one periodical for a number of years. The cards are arranged in strict alphabetical order of the actual periodical

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titles, ignoring the definite and indefinite articles, where such occur, and the same convention could largely be followed with regard to the storage positions of the periodicals, whether they be in unbound form in suitable racks or pigeon-holes, or in the form of bound volumes standing on the library shelves.

Routine with periodicals and dissemination of information

So far, we have been concerned only with the custodianship of written, typewritten, and printed material, and in some very small and unenlightened concerns the library duties might consist only of that. In most cases, however, the librarian's service to the firm goes beyond this, into the dissemination of the information, and especially that appearing in the periodical literature. This aspect may best be covered by exemplification of an imaginary set-up, in which the librarian is working in the same building as a small team of technicians or research workers and an executive chief, all of whom strive to keep abreast of the current literature. The library routine could then be on the following lines.

The incoming periodicals are allowed to accumulate, under the librarian's custodianship, until a fixed day, say Monday, each week ; on the fixed day, all the week's accumulated periodicals are entered on their respective record cards and are then laid out, in alphabetical order, on a table set aside in the library room for this purpose, with the stipulation that these issues, i.e., those on the table, are for perusal in the library only, and are not to be removed from the room. Any of the technicians noting an article of interest to him in these periodicals marks the first page number of the article on the outside front cover of the periodical. The following Monday the periodicals are removed from the special table, and are replaced by the new accumulation of current issues.

The contents of the periodicals taken from the special table are then studied by the librarian, and any item of interest or value in the light of the research or other work being carried on in the librarian's firm or organization is duly marked in pencil, and the appropriate page number again denoted on the outside cover. The batch of periodicals is then taken into the chief's room, for his perusal, he again marking any item of interest which has not already been so denoted.

On coming out of the chief's room, the marked items are listed in typewritten form, the literature reference, i.e., the title of the journal, the year, volume number, month of issue, and the page numbers covered by the item, being quoted. If a synopsis to the article is given this should also be included. One copy of this typewritten list is circulated in a named order to those for whom it is intended, the copy finally coming back to the librarian, for filing. A separate copy of the list is cut up into its separate component items, each of which is pasted on a card. The cards are then separately marked with the appropriate U.D.C. numbers, and are filed away for the future reference which will inevitably be required.

This abstracting, if such it can be called, is, of course, for inside use only, and the periodicals are then stored in suitable situations from which they can be readily available for future consultation.

RECORDING INTERNAL LOANS

In the small library the internal loans, though numerous, will not be numerous enough to justify that an individual should be allocated full time to their recording, and some very simple alternative scheme will have to be worked. The following is suggested :

Supplies of stiff cards, of length greater than the width of a normal book (8 in. $\times$ 3 in. will be found suitable) could be made available in the library room, the procedure then being as follows : Dr. Jones wishes to take a certain text-book out of the library room ; he goes to the catalogue, ascertains from it the accession number, i.e., the location of the book, takes the book, enters on the card, in pencil, the accession number denoted on the spine, together with the date and his initials ; he then places the card in the situation which was previously occupied by the book he has withdrawn. On returning the book to its location after use, he withdraws the stiff card, cancels his entry, and puts the card back among the other cards for re-use. If, while the book has been in his possession another individual had required it, the fact that it was out, and the information as to who had it out, would have been readily gathered from the card. The same system, with suitable adjustments in the information marked on the card, could be used in the temporary withdrawal of bound or unbound periodicals from the library room.

CONCLUSION

I feel that I have been able only to sketch outlines of procedure, but some of the aspects which I have, from the time element, more or less had to gloss over could well provide the bases of papers in themselves. However, I trust that enough has been said to enable our intelligent and completely hypothetical Miss Smith to build upon the skeleton outline for herself.

THE NEEDS OF A SALES DEVELOPMENT ORGANIZATION

BY H. M. BIGFORD, F.I.M.

T.I. Aluminium Limited

Birmingham, 25th November, 1952

Summarized report

THIS paper formed part of the series emphasizing the varying needs of different types of users of technical information services. Mr. Bigford explained that his particular interests lay in the development of new uses for aluminium and its alloys, metals for which many applications have already been found on land and sea and in the air, and in almost every industry. It is necessary to consider the wide diversity of applications in relation to the varying properties of the available types of aluminium and its alloys—types ranging from the highly ductile pure aluminium to the newer high-strength alloys. A scientific approach must be used to ensure that the most suitable type is used for each new application, and this means a consideration of such factors as corrosion resistance, strength, finish, jointing, etc. Apart from available alloy types the metal is also available in different forms—as extrusions, plate, tubes, sheet and strip, castings, etc.—so that a proper consideration of the most applicable form to be used is also necessary. In many instances this introduces, among other things, the need for full consideration of the jointing problems as well as other factors which may complicate the economic picture. From information concerning the known properties of the metal or alloy and its reactions under similar working conditions, as intelligent an assumption as possible must be drawn on which recommendations on probable service behaviour can be made.

Mr. Bigford pointed out that projects in a development organization spring from two main sources ; they may be self-generated or they may be initiated by enquiries from prospective users. In the first case, a necessary preliminary step is to obtain, usually from the firm's own information service, a review of all available pertinent information on the materials already in use in the application under scrutiny. Previous history of service given by the currently-used materials is essential and a knowledge of technical problems already overcome is always most useful. Further invaluable information is that relating to comparable aluminium alloys already used in the field and data concerning any material they may have replaced. A detailed consideration of information of this kind enables the development organization to make firm recommendations regarding the possible entry of aluminium into a new field or the possible widening of that field. In the case of projects arising from customers' enquiries, the subject is usually more specific and invariably urgent. Here the speaker said that he expected to be able to call on the information service to provide information directly applicable

to all such enquiries. In addition, there is a constant flow of day-to-day enquiries calling for speedy action and in many of these cases the development organization needs to be able to obtain, on call, a supply of concise yet comprehensive information. Again such information is wanted immediately to enable the development organization to make definite recommendations.

A further point of contact between the development organization on the one hand and the information service on the other, relates to the question of patents and patentability. Development work is often very costly and upon occasions it is necessary or desirable to apply for patent protection—the information service that can examine the patent position, both to ascertain the degree of novelty introduced or to advise concerning anticipation, is performing a valuable service.

The regular supply of information about new technical developments is another field in which Mr. Bigford looked to the information service. Abstract publications can provide details of new competitive ventures as well as give an overall picture of work in progress elsewhere. The speaker saw abstract publications as most useful adjuncts in view of the increasing difficulty, often approaching impossibility, of finding time to consult regularly all the technical journals and similar material touching upon his work.

Summing up, Mr. Bigford felt that perhaps the most important factor is the establishment of a degree of liaison and lively co-operation between the development organization and the information service so that (a) the enquiry for information is adequately stated and (b) the information service is already in possession of sufficient background to enable it to talk the same kind of language. Another, perhaps a hardly less important, factor is the need to stress the urgency of most enquiries coming from the development organization; although technical, these enquiries almost always have a heavy commercial bias and are, of course, frequently associated with enquiries which, if answered promptly, may result in firm orders. A further point, one that overlays many of the demands made by the development organization, is the need for a comprehensive information service, and it was emphasized that an information service should not only supply information from its own resources, but should also be the link and the channel through which information available outside the organization itself (i.e. in research associations, learned societies, trade organizations, and the like) is made available to the sales development organization.

Mr. Bigford's paper was followed by a discussion.

THE INFORMATION NEEDS OF THE WORKER ENGAGED IN LONGER TERM RESEARCH : THE VIEWPOINT OF THE CHEMIST

BY H. T. S. SWALLOW, M.Sc.(TECH.), A.R.I.C.

Based on a paper read to the Midlands Branch, Birmingham, 15th January, 1953

THE needs of the research worker engaged in longer term research can be broadly divided into two categories. The first concerns the background and mental equipment of the research worker himself, and the second the particular problem upon which he is engaged. To some extent these two categories become merged and indistinguishable, but it is necessary to bear in mind that the worker's success will depend very largely upon his background and mental equipment and that this is not static, but grows with experience.

As work on a problem develops it may become necessary to employ branches of the fundamental sciences of which he is not master, and he may, therefore, want to borrow books and publications which appear to have nothing to do with his problem. This may be necessary even when there are available specialists whom he can consult, since he will probably want to learn something of the specialist's language in order to make the best possible use of the contributions which the specialist can make. The information officer will, therefore, not take it amiss if research workers ask for help in finding suitable books and publications dealing with the fundamental sciences. When we consider that industrial research is very largely concerned with the applications of science in industry, we will, I think, realize that in helping to satisfy these needs the information officer is probably performing the most important part of his functions as they apply to research work.

Is all the information asked for necessary?

While we are considering this first category it is perhaps also worth while to discuss the very important part which character can play in industrial research. Most research workers are fundamentally honest and each realises that his individual mental armoury has its limitations. In industrial work time is money, and it may be much more profitable to have a partial solution in a short time than a complete solution in a much longer time. For this reason the information officer should not lose patience if the research worker appears to give no time at all to the study of some very abstruse publication which he has gone to a great deal of trouble to procure. The research worker may have realized almost instantly that before he can study the possible applications to his problem of this particular book or paper, he will have to spend a great deal of time acquiring some new background, such as a mathematical terminology with which he is quite unfamiliar, before he can begin to understand it. To do so may be unprofitable and he may feel that in this case an experi-

mental solution can be found more quickly. He may, however, be reluctant to discuss his reasons in great detail, believing that such a discussion could only be a waste of time. It was reported that an admirer of the doctor who attended the birth of a famous set of quintuplets presented him with an erudite tome on obstetrics. The doctor, however, merely flipped over a few pages and muttered 'Too deep for me!' We may perhaps quarrel with the choice of this as an example on the grounds that the operation concerned was hardly a long term research. When a publication is too deep, however, we are probably well advised to admit it and approach our problem some other way. Without looking at the original paper we would not in most such cases have appreciated the position fully, and getting it was not a waste of time, even though we could not use it.

Sometimes, however, papers which may not be entirely relevant to the conclusion of an investigation may have come in for a good deal of intensive study. Thus, to take a rather minor example, when confronted with the problem of drawing up a specification for a clay for a certain use, consideration was given to the alternative possibilities of using a fundamental examination of clays to determine their mineralogical composition, with the idea of fixing limits of compositions of clays for this use, or of devising an empirical specification based on physical properties. The literature of clays was extensively studied to reach the conclusion that the first possibility was impracticable. The results of the investigation proper consisted of a statement of the specification and the results of the practical experiments which led to its adoption. Not much would have been gained by including a review of the literature which in the final outcome was not required to support the conclusion. The time spent on the literature, nevertheless, constituted quite a useful addition to the worker's background and experience.

Another example, which is probably met with frequently, is that of the worker who is endeavouring to trace the cause of a defect in a works product or process, and who studies the mathematics of statistics in order to decide whether the cause can be found by a statistical examination of works records before embarking on an experimental approach. Such studies often make a potentially valuable addition to a worker's background without noticeably advancing the object of the investigation.

Information of direct value. Literature searches.

The second category of information is that bearing on the particular problem which is the subject of the research. It would seldom be disputed nowadays that 'the literature' should be thoroughly searched for relevant information before any work is begun. The research worker must subject his problem to a critical analysis and endeavour to break it down into sub-headings suitable for a literature search. It is perhaps easier to illustrate this by way of example, and we may consider briefly an investigation of the causes and possible cure of a defect in vitreous enamels known as sulphur scum. There are available two quite good bibliographies dealing with vitreous enamels, one prepared by the American

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Ceramic Society and the other by the Institute of Vitreous Enamellers. These both contain references to papers reporting investigations into the causes and prevention of 'scum' on vitreous enamels, and it would be very easy to conclude that all the relevant information likely to be found in the literature was available there. On analysis of the subject, however, it would appear that vitreous enamel is a type of glass and that the investigation is concerned with the action of sulphur dioxide upon glass at the temperatures used in vitreous enamelling. The action of sulphur dioxide on glass has been extensively studied in connection with the use of sulphur in glass annealing lehrs to produce a brilliant gloss on glassware, and in connection with the bloom formed during the lamp-working of glass, and in the literature of glass a great deal of extremely relevant information was found. The ideal analysis would break the subject down to basic chemical reactions, but this is not always possible.

Information from widely different fields may often be required in connection with an investigation of an industrial problem. The writer was once asked to investigate the causes of the well known effects of calcium chloride when used as an accelerator in Portland cement concrete, with the ultimate aim of determining if its use for that purpose could be encouraged. These effects appeared to be almost entirely beneficial, and it was felt that more fundamental knowledge of the causes and chemistry of the reactions involved might enable them to be more widely utilized. In those days there appeared to be a prejudice against the use of calcium chloride. Precise and extensive information about the effects of calcium chloride in concrete was obtained from the literature as well as a good deal of information about the chemistry of the reactions. This was subsequently extended considerably by experimental work. In order to apply this information, however, it was necessary to learn about the way in which concrete was used in practice, and it was eventually realized that little advantage could be taken of the increases in rates of hardening which could be brought about by the addition of calcium chloride if some then current codes of building practice were rigidly enforced. Codes of building practice would seem to be a far cry from the original terms of reference of a chemical investigation, yet in this case would have formed the basis of a reasonable request to the information officer.

In the chemical literature, at any rate, a literature search should generally go back a very long way. Frequently very old information is enhanced in importance by more recent discoveries. Thus the descriptions given by Senderens (*Ann. Chim. Phys.*, 1912, vol. 25, p. 449) of methods which he used to prepare active alumina catalysts were sufficient, in the light of more recent information, to indicate that he had been preparing pure gamma-alumina. His results were of considerable interest in a study of gamma-alumina catalysts, although an X-ray crystallographic examination which is necessary to identify this substance would not have been possible in 1912.

If the research worker has broken down the subject of the investigation to give suitable headings under which the literature indexes can be searched, the actual search becomes fairly straightforward and, if the

information section has time for such things, it could undoubtedly help. When the literature has been searched the results should, in my view, be formally written up in a report. Moreover, this report should not only give an account of what relevant information was found. It should also state what literature was searched, and under what headings. The information should be reviewed and possible conclusions stated. It is hardly for me to lay down general rules for the procedure to be followed in every research, but this suggestion would constitute quite a good general rule. Many experimental investigations would never have been required if this formal drill had been followed. When the literature search is completed the investigation may be said to be well under way. The research worker, however, has by no means finished with the literature. New relevant information may appear in the literature as the work proceeds. It may also be possible to check laboratory observations by reference to the literature.

It will be clear that in my view 'information' must play a big part in any industrial research. How much of the actual work is done by the information officer and how much by the research worker must depend on the details of the organization concerned. Presumably most research workers would accept all the help they were offered, but would equally be sufficiently conscientious to do it all themselves if no such help were forthcoming. Whoever does it will need a good library. Good library services are of paramount importance to the worker engaged in long-term research.

Files

Up to now we have only considered the information officer as handing out information. If he is to be able to perform this service effectively he must also be given information. Whether or not he is in control of his Company's files, he is certainly entitled to have strong views on the systems of filing to be adopted, on the co-ordination of filing systems in the Company, on the form in which technical reports are written and all such relevant matters. Valuable information is often to be found in correspondence files and in makers' catalogues. The research worker may reasonably expect to get information about all these matters from the information officer. The information officer should also know about the activities of the Company's technical and commercial staff, about 'Who is doing what'. He will generally be concerned with such matters as the circulation of reports and copies of correspondence.

Filing and indexing letters and reports in a big Company is usually recognized to be an important task. Old and unwanted material must be ruthlessly removed from the files and destroyed, and the research worker should not complain if he is sometimes asked to write summary reports to facilitate the work of filing.

As regards the form of reports, the form which I favour is :

- (1) Descriptive Title (with dates, authors, etc.).
- (2) Summary.

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- (3) Introduction—giving the reasons for doing the work.
- (4) A statement of the important conclusions if it is felt to be necessary to elaborate the one already given in the summary.
- (5) A description of the work (including the information found in the literature) with the results, tabulated where possible.
- (6) Bibliography.

It is frequently useful if the same general order as is used in reports is followed in important technical correspondence.

Finally, I feel it may be worth while to discuss in greater detail this important matter of 'keeping abreast of the literature' and the way in which the information officer can help.

On 'keeping up with the literature'

There is a general feeling in most laboratories that it is desirable to scan the contents of the scientific and technical journals for information on the latest progress in fields of interest. The method to be adopted for doing this is a matter which may have quite important effects on the efficiency of the information services, particularly where they effect research. The very worst method in my opinion is one still all too commonly used. For the sake of an example, let us say that an engineering company takes some ninety journals in its central library. These all receive almost identical treatment. A list of from three to fifty odd names is typed or written and attached to each copy as it arrives. It then goes into circulation.

The method of using this system is quite simple. Generally the journals arrive on the research worker's desk in bunches of from five to twenty or more, covering a wide range of dates. One looks at the date and then at the list of names. One then usually crosses off the name of a man who left the company two years ago and returns the journal to circulation. In the time available no other course is practicable. For any formal literature search it is necessary to rely on the public libraries and on one's own resources.

In this system, of course, each member of the staff is expected to keep a card index bibliography of his own subjects. Even when the staff is small and not widely dispersed geographically, I doubt if the system could be regarded as efficient. To make it so, it would be necessary to have a uniform system of indexing, to get all the private indexes typed and regularly collected for inclusion in a large central index, which means that all the staff must somehow be pressed into the service of information. I doubt if anyone with experience of library and information work would give such a proposal a second thought. At best it is a feeble attempt to duplicate the work of the abstracting journals.

I have purposely chosen this example because it gives a clear indication of the fact that in a large company the problem is really one of some magnitude. In order to get anything useful started it is necessary to have the measures proposed backed by someone in high executive authority, preferably a director. In the example chosen the company might well be

spending quite large sums annually on its 'information service' (although it might not call it that). It is obviously not getting for this expenditure anything like the value which it could and ought to get. Seen in this light, it may perhaps be appreciated that expenditure on the preparation of a weekly bulletin of information and abstracts can be not merely a very good investment, but is essential if the library is to be properly run and able to provide for the needs of the research as well as production and other staff, and if so many people are to use the same service 'to keep up with the literature'. If such a bulletin is being prepared, then the information staff must be kept informed of all the current and potential interests of the research staff.

THE ORGANIZATION AND USE OF INFORMATION IN INDUSTRY

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*Joint Meeting of Midland Branch of Aslib and the Institution of Production
Engineers, Birmingham, 25th March, 1953*

INTRODUCTION

INDUSTRIAL executives frequently require special information in order to solve their particular problems. A Sales Manager may have to estimate the market for a new chemical. A Production Engineer may require technical data in order to undertake the high-speed machining of steel. A Works Manager may have to find the correct anti-corrosive treatment for a certain type of ferrous metal. This kind of information and much else can often be obtained from those who have a specialist knowledge of the subject. There are also many cases in which the published results of investigations into special problems will be available in libraries.

The Department of Engineering Production of the University of Birmingham has carried out studies during the past eighteen months into the dissemination and use of specialized information throughout Midlands industry. Particular attention has been paid to the ways in which information, especially scientific and technical information, originates and finds application.

Many persons have co-operated in this work. They include, in the manufacturing and commercial fields, the managers of local companies, the research directors and information officers of industrial laboratories and of research associations, and members of the staff of the Birmingham Chamber of Commerce. Information has also been furnished by members of the staff of the University of Birmingham and by members of the Civil Service and of Government agencies.

THE INFORMATION NEEDS OF MANAGEMENT

The number of sources from which co-operation had to be sought emphasizes the variety of organizations which comprise present-day industrial society. The company, however, is the basic unit in this society. Information practice is, therefore, best examined in relation to the needs of company managers.

The environment of the modern business unit embraces a number of inter-related interests. These are shown diagrammatically in Fig. 1. The management of the unit is concerned with forecasting, planning, co-ordinating and controlling the business activities. In so doing the managers must take account of the distinctive views and opinions of the four sections of the community involved in company activities.

The four sections of the community can be described as the consumers,

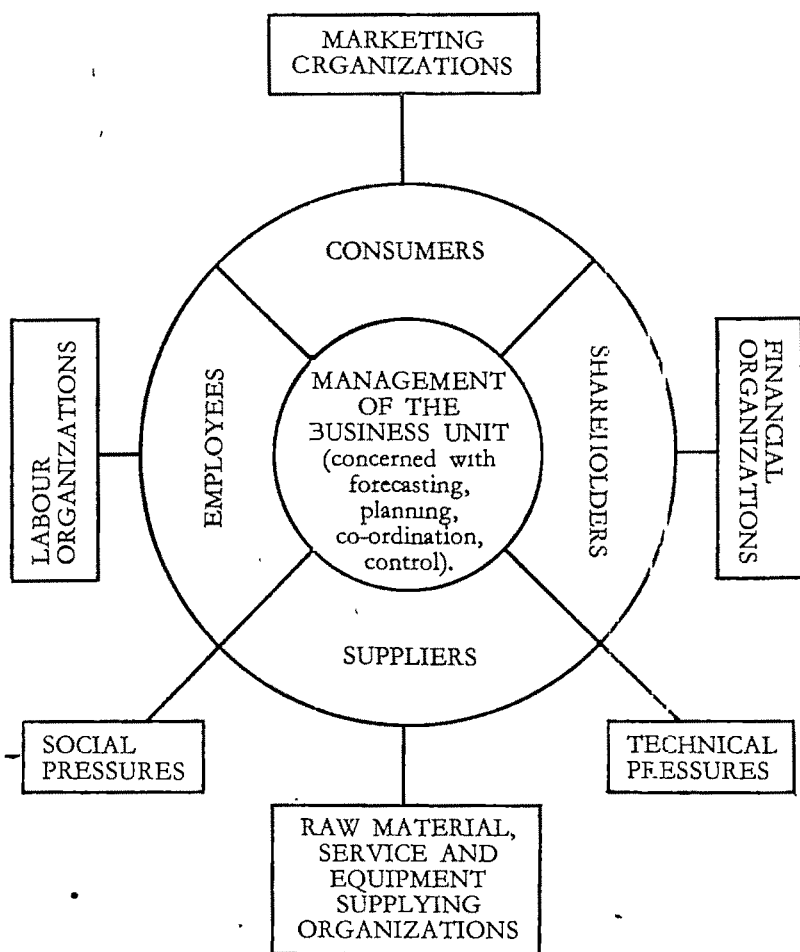


FIG. 1. THE ENVIRONMENT OF THE MODERN BUSINESS UNIT

GILFILLAN : INFORMATION IN INDUSTRY

FINANCIAL	e.g. provision of capital
COMMERCIAL	e.g. purchasing and sales
TECHNICAL	e.g. research, design, plant engineering
ACCOUNTING	e.g. costing, budgeting
PRODUCTION	e.g. pre-planning, materials control
PERSONNEL	e.g. recruitment, training, welfare

INFORMATION

i.e., the collection, classification and dissemination of information required by the organization.

FIG. 2. MANAGEMENT FUNCTIONS

the shareholders, the suppliers of raw materials, services and equipment, and the employees. The views and opinions of these sections are expressed by bodies which represent their particular interests. These views and opinions can also be consolidated and presented in the Press. The bodies themselves can be designated as marketing, financial, supply and labour organizations. These organizations are the information sources through which management can maintain contact with the consumers, shareholders, suppliers and employees.

Management, in addition, is called upon to react to social and technical changes which take place in the course of time. These pressures, as they may be called, are evidenced by public opinion, legislation and by the effects of scientific and technical research. Many such social and technical changes are initiated by bodies which serve particular interests or which are concerned to advance knowledge in special fields. Other changes originate from the community at large.

The company can be aided in two ways by the views, opinions and factual knowledge of outside sources. First, such information can be of help in deciding on company policy. Second, such information from outside sources can be used to assist management to carry this policy into practical effect. Management activities have, since the time of Fayol, usually been divided into six major functions. These have been variously named at different times but can be considered as finance, commercial, technical, accounting, production, and personnel. These are listed in Fig. 2. The main aim of the general management function is to co-ordinate the other functions so that the policies laid down by the Board of Directors can be effectively implemented. This purpose can only be fulfilled if, in addition, the activities of the company are co-ordinated with those of the other elements in industrial society. Certain information

BANKING	..	Joint stock banks
MONEY MARKET	..	Acceptance and discount houses
CAPITAL MARKET	..	Stock exchange, issue houses
LAND AND PROPERTY	..	Legal firms, estate agents
INSURANCE	..	Insurance companies, classification societies
GOVERNMENT FINANCE		Industrial and Commercial Finance Corporation, Finance Corporation for Industry
INTERNATIONAL FINANCE		Mutual Security Agency, Colombo Plan

FIG. 3. FINANCIAL ORGANIZATIONS

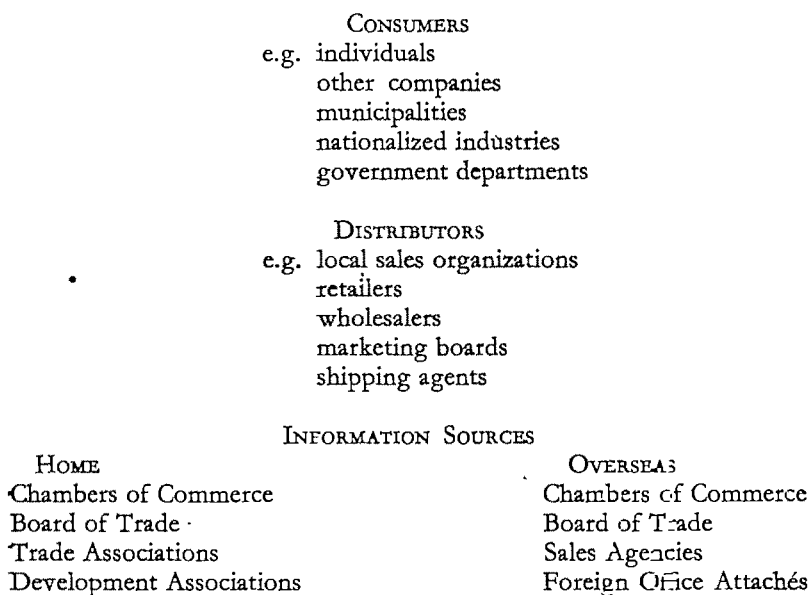


FIG. 4. MARKETING ORGANIZATIONS

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needs must be met if such co-ordination is to be achieved. These needs can best be examined by considering some of the organizations which form the link between the major management functions and the four sections of the community involved in the company. The agencies through which social and technical pressures are brought to bear on the company must also be examined.

(a) *Financial and commercial organizations.* The basis of successful company operation is a sound financial policy. The financial organizations with which management comes into contact will, therefore, be examined first. Some of these are indicated in Fig. 3. They are organizations which are involved in company finance. The initial capital of a joint stock company, it must be remembered, is obtained from the shareholders. Money for the day-to-day conduct of the company, e.g., the payment of wages and the purchase of raw materials, must be obtained from the sale of manufactured goods. If sales cannot be met or if money becomes tied up in temporarily unusable form, e.g., in semi-processed parts or in raw materials, then there may be inadequate cash in hand to meet operating requirements. Such contingencies may possibly be met by securing a loan from a bank or an individual. Cash might also be obtained by encashing bills on the money market. This action would involve contact with acceptance and discount houses, merchant bankers and the like. Money required for a longer period could be obtained by issue of a Debenture. The only way, however, in which fresh money could be brought into the business, apart from using reserves built up from trading in former years, would be to approach investors through the medium of the Stock Exchange. Shares might be taken up, not only by individuals, but by organizations such as insurance companies, investment trusts, issue houses and other organizations concerned with company finance. There are, indeed, many specialized organizations concerned with the provision of company finance. Specialized organizations are also involved in the transfer of land and property and in insurance. The effect of some aspects of national and international finance will be mentioned later.

The immediate policy of the company is determined by the business and trading position. Fig. 4 lists some of the marketing organizations which serve as information sources for management. The consumer, who can be either an individual or an organization, can be reached through one or other of several routes. The local sales organization of the company, retailers (traders, multiple stores or co-operatives), wholesale and trade suppliers, distributive trade associations and marketing boards are some of the channels by which consumers are supplied. The company sales staff may be called upon to assess the demand for the products. Market research consultants can, however, be used to obtain this information. Advertising agencies and consultants may be employed to promote sales. Information about both the home and overseas market can be obtained from organizations such as the Board of Trade and Chambers of Commerce.

The practices of suppliers of raw material, equipment and services may have a considerable influence on the trading position. Some types of

RAW MATERIALS	Other Companies
	Nationalized Industries
	Government Agencies
FUEL AND POWER	British Electricity Authority
	Gas Council
	National Coal Board
WATER	Local Government Authority
	Statutory Company
	Catchment Board
TRANSPORT	British Transport Commission
	Port and Airport Authorities
	Shipping Companies
	Exporters
BUILDINGS AND PLANT	Architects
	Civil and Structural Engineers
	Local Planning Authorities
	Ministry of Works
SPECIAL SERVICES	Managerial and Technical Consultants
	Punch Card Services

FIG. 5. RAW MATERIALS, SERVICE AND EQUIPMENT
SUPPLYING ORGANIZATIONS

RECRUITMENT	The Press
	Ministry of Labour
	Universities
	Employment Bureaux
TRAINING	Government Departments
	Universities
	Professional Institutions
EMPLOYMENT AND WELFARE ..	Ministry of Labour
	Medical Research Council
	National Institute of Industrial Psychology
NEGOTIATION AND CONSULTATION	National Councils
	Employers' Federations
	Trade Unions

FIG. 6. LABOUR ORGANIZATIONS

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supply organizations are listed in Fig. 5. Raw materials may be obtained from a wide range of sources. Under present trading conditions the activities involved in purchasing may go far beyond mere acquaintance with trade sources of supply and the establishment of commercial relations. The whole pre-planning of production may depend upon the tonnages of material made available by the suppliers. A high degree of co-ordination between seller and buyer may be required. If raw materials or minerals have to be procured then purchasing activities may involve surveys of world natural resources and rates of extraction. The supply of fuel and power is now a national responsibility. Management must accordingly be aware of the trends of opinion as they affect these matters at a national level. The practices of transport organizations may also have considerable influence on the trading position. Among the trading information upon which management must have information are suppliers' practices concerning trade discounts, contra-accounts, credits and returns and carriage charges. The erection of buildings and plant involves contact with various professional and legislative bodies. These include architects, builders, civil engineers as well as local and national Government authorities.

From time to time a need for special services may arise. A large number of bodies serve industry, either on a consultant basis or by providing special facilities. These include managerial and technical consultants, punch-card services, computing and testing services, most of which are available on a commercial basis.

The financial and commercial circumstances in which the company operates are bound up with the wider issues of national and international finance and trade. Variations in the Bank Rate, Government directives setting out the conditions upon which the banks are to loan money and such actions have direct repercussions upon the policy and actions of the company. The sum total of these effects throughout industry is in turn reflected in the state of the national finance. There have also to be taken into account the arrangements made between nations to secure the flow of money and trade into designated areas of the world. Exchange control systems, and the creation of special organizations such as the Mutual Security Agency and the Colombo Plan are among these. Overseas trade is also directly controlled by reciprocal trade agreements between nations, tariff laws, customs regulations and practice, taxation arrangements, quota restrictions, and the like.

(b) *Labour organizations.* Personnel work has two aspects. First, a labour force adequate to meet the company's needs must be recruited and trained. Second, the morale of the force must be built up so that the potential working capabilities of the employees are realized. Some of the organizations involved are listed in Fig. 6.

Employees can be obtained directly by advertisement. They can also be obtained through the Ministry of Labour and its agencies (e.g. the Scientific and Technical Registry and the Youth Employment Service), the Universities (by way of Heads of Departments or Employment Bureaux), or through agencies such as the Public Schools Employment Bureau.

PUBLIC OPINION	.. ..	.. ..	applied by the Press
ACTS OF PARLIAMENT	.. ..	.. ..	applied by Government Departments
			e.g. Treasury
			Ministry of Supply
			Ministry of Labour
			Board of Trade
LOCAL REGULATIONS AND BYE-LAWS			applied by Municipal Offices
			e.g. Public Health Department
			Public Works Department

FIG. 7. SOCIAL PRESSURES

THE TECHNICAL PRESS

RESEARCH AND DEVELOPMENT SOURCES

DSIR and the Research Stations	Company and
Other Government Departments	Commercial Laboratories
Patent Development Organizations	Co-operative Research Associations
	Research Institutes
	Universities
	Professional and Learned Societies

COMPETITORS PROGRESS (in adoption of new practices and equipment)

Trade Exhibitions	Anglo-American Productivity Council
Development Associations	British Productivity Council

FIG. 8. TECHNICAL PRESSURES

National educational curricula and prescribed standards of attainment gradually alter. Management must appreciate how the policies of bodies, such as the Ministry of Education and the Board of Trade, will affect the recruitment policies of the company. Company training programmes, where these exist, have to be co-ordinated with the regional and national facilities for education and training.

The importance of the human factors in industry is now recognized. Conditions of employment, wage-plans, promotion and redundancy policies, medical and ambulance services, safety organization and training, canteen arrangements, pension and welfare schemes, are among the factors which are the concern both of the company and of independent bodies. Ventilation, heating and lighting are fields in which research is being actively carried forward. Among the organizations concerned with these human factors are the Medical Research Council, the Ministry of Labour, especially the Factory Inspectorate, and also the Research Stations of the Department of Scientific and Industrial Research, as, for example, the Building Research Station. The development of good working relations within the factory is an area in which work has been done by organizations such as the National Institute of Industrial Psychology and the Tavistock Institute of Human Relations.

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(c) *Social pressures* (Fig. 7). The currents of opinion and trends of thought which sweep society become consolidated and formalized in the Press. Management is closely affected by such views and opinions. In time these tend to become expressed in controls and regulations which affect the individual company. Much of the best practice in industry is given legal sanction by what may be termed constructive legislation. Examples of the embodiment of desirable practices into law are given by the Factory Act and the National Insurance Act (which safeguard the interests of employees), the Company Act (designed largely to protect the investor), and the Patent Act (which safeguards some of the technical activities of the company). Parliament, it is important to note, takes cognizance of specialist bodies and the influence extended by formalized opinion. The Stock Exchange, for instance, is afforded legal recognition. A further example is provided by the legal requirements which must be met by a company which goes to the public for funds. In these circumstances time must be allowed for informed opinion to be expressed in the financial and technical Press. Much legislation is, however, of a regulative nature. The object of this is to ensure that the industrial resources of the nation are used to meet the country's needs. The Board of Trade and the Ministry of Supply are among the departments concerned with this type of regulation. There are also local regulations and by-laws to be considered.

(d) *Technical pressures* (Fig. 8). The industrial company is engaged in processing raw materials into products. Two aspects of this work can be recognized. There are the technical considerations pertaining to the design and the manufacture of the product and there is also the organization of machines, materials and employees to carry out these activities.

Research into the properties of materials and into methods of manipulating them is being continuously carried forward. As a result, new data is established, new materials are made available and new techniques of manufacture are devised. The research sources include Research Stations of the Department of Scientific and Industrial Research, Research Associations, Universities, Technical Colleges, sponsored research institutes, commercial laboratories and company laboratories. The scientific and technical knowledge obtained as a result of incessant research and continuing experience is disseminated chiefly as published material. It is mainly in this form that it is preserved in libraries throughout the country. Management is also affected by the codification of practice which is carried out by bodies such as the British Standards Institution.

The successful operation of the company depends largely on the planning of manufacturing activities in advance of production. Materials and special tools may have to be brought in from outside sources ; sub-contracts have to be placed. The methods of organizing machines and employees to perform manufacturing operations are the subject of an extensive and growing literature. The analysis and improvement of the existing processes, work place layouts and manual operations used in a company have now assumed great importance. These analytical techniques are the concern of organizations such as the British Institute of

Management and the Institution of Production Engineers.

The technical Press plays an important part in disseminating information on new methods. Technical change is also stimulated by the evidence of progress indicated at Trade Exhibitions and by agencies such as Development Associations and Productivity Councils.

EXAMPLES OF INFORMATION WORK

This survey of the environment of the modern business unit indicates the types of organizations which can be used to meet the information needs of managers engaged in different company activities. Two examples will serve to illustrate how these specialist sources of information can be used. These examples have been selected from a number which were received under a Technical Enquiry Scheme operated for an experimental period by the Department of Engineering Production acting in co-operation with the Birmingham Chamber of Commerce. Under this scheme the normal facilities of the Information and Statistical Department of the Chamber were extended to include the handling of enquiries for which no source of information was known or locally available. The enquiries were scrutinized by an Information Panel, representing regional and national information sources, which put the enquirer into touch with the appropriate source of information. The purpose of the scheme was to assess the nature and extent of the local demand for scientific and technical information and to acquaint Chamber of Commerce Members with the use of sources of information.

(a) *Metal corrosion.* An enquirer wrote in to ask if there was any Department at the University which could help him with a problem causing him endless trouble, particularly with his export market. He enclosed two bars that formed part of the handle of the coffin-furniture sets which he manufactured. These had been corroded, apparently by acids in the wood. He explained that this wood came from Borneo and that he used off-cuts. He asked for advice as to a type of wood which would not contain acids likely to attack the nickel plated steel tubes.

The Information Panel directed the enquirer to the Forest Products Laboratory of the Department of Scientific and Industrial Research. This organization is listed in the directories and guides to specialist sources of information as covering all aspects of timber research.

An analyst's report was received from the laboratory. The two handles, it was stated, contained considerable quantities of sodium chloride. It was pointed out that this had the effect of keeping the surface of the wood damp under what would normally be dry conditions and thus promoting corrosion of the steel through pores and other imperfections in the nickel plating. Under these conditions the corrosion was particularly rapid as the salt acted as a good electrolyte. PH figures to support this opinion were quoted. The wood, it was suggested, might have been part of a baulk of timber which had floated in sea-water for a considerable period. The timber submitted was identified and some notes on this and other woods suitable, if not contaminated with sea-water, were given.

The handling of this enquiry illustrates the practical aid which managers

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can obtain from Government research sources. The Department of Scientific and Industrial Research, which was approached in this instance, is concerned with the industrial application of all branches of natural science. There are some fourteen research stations which cover, between them, a wide range of scientific and technical fields. The specialized knowledge accumulated at these stations is in general freely available and many thousands of enquiries are dealt with each year. The services given by the Research Stations, such as the Forest Products Research Laboratory, are supplemented by a Technical Information Service at D.S.I.R. headquarters. This service will put enquirers where necessary into contact with specialized sources of scientific and technical information.

(b) *High-speed machining of steels.* An enquirer, unable to locate any up-to-date information on the high-speed machining of steel, posed the following question :

'In 1931 a patent, later bought by Krupps, was taken out by Dr. Salmon regarding the use of super-critical speeds when machining metals. Has any recent research been carried out regarding the use of high speeds—of the order of 2,000 feet per minute or greater—when machining plain carbon and alloy steels ? If not, what information is available regarding high-speed machining with particular reference to the parting off operation ?'

The enquirer was referred to the Production Engineering Research Association as the main source of information in this field.

Information was also furnished by two manufacturers of machine tools. The first gave three references to periodical literature. The articles concerned dealt with the carbide milling of steel at 6,300 feet per minute, with the high-speed cutting of metals and with high-speed machining in general. The second manufacturer gave information on the applications of his company's tools to the finish machining of mild steel gear blanks at 2,000 feet per minute. He also referred to details of American laboratory tests at sub-zero temperatures carried out at such speeds.

Information was also given by the Mechanical and Engineering Research Organization of the Department of Scientific and Industrial Research. The Materials Division supplied further references to articles on the subject. A note was given on the limitations of the original work on which the patent was based and some comments on the basic problems of high-speed cutting were made.

The example illustrates the way in which it is possible to identify organizations at which experimental work is being carried out and the manner in which managers can, by suitable enquiry, build up information on contemporary practice. This is the first step towards the use of information sources. In this instance before a specialist organization could give effective aid, further details of the circumstances surrounding the enquiry would have to be known. The success with which information sources can be used depends not only on the specialized knowledge which is available but on a close understanding of the needs of the enquirer. Only thus can irrelevant information be excluded.

THE USE OF INFORMATION

These examples emphasize the closely integrated nature of the modern business environment. Managers are affected by Government legislation, the emphasis on the human factors in industry and the results of scientific and technical research. These are also the concern of specialist organizations representing the interests of consumers, shareholders, suppliers and employees, and of agencies through which social and technical pressures are brought to bear on the company. Further studies carried out by the Department of Engineering Production, in co-operation with the executives of local companies, have yielded an insight into present managerial practices by which contact between managements and outside sources of information is maintained. Some of the methods adopted by managers who have set out to make systematic use of outside sources of information have also been studied.

(a) *Management practice.* In practice executives use information sources in two ways. Firstly, they use the sources to keep up to date with developments in particular fields. Secondly, they use the sources to seek the solution to specific problems for which the answer cannot be found within the company. In some cases the company specialists are responsible for maintaining contact with information sources. In cases where job specifications exist, these will probably embody a statement that the executive will be responsible for acquainting himself with current developments in his field and where such information affects his colleagues, he will be responsible for bringing it to their notice. In other cases, a particular executive may be charged with the responsibility for surveying current developments, usually those which are scientific and technical in nature. He is expected to call the attention of general management to relevant items of information. The attention of executives tends, however, to be confined mainly to industrial information sources, as, for example, other manufacturers, trade suppliers, and industrial laboratories. It would seem that the facilities offered by specialist organizations are not always appreciated.

(b) *Specialist organizations.* The first task of anyone wishing to use information sources is to identify the organizations which serve his needs and understand the particular interests with which they are concerned. There are many published guides to these sources. The scientific and technical field can be taken as an example. The organization of civilian Government research in this country is set out in *Government organization in the civilian field*, H.M.S.O. The work carried out by the Department of Scientific and Industrial Research Stations and by the Research Associations is set out in *Brief guide to the research activities of D.S.I.R. and the research associations*, D.S.I.R. The research being carried out in university faculties is listed in *Guide to scientific research in British universities*, H.M.S.O. Development associations, trade associations and other bodies are listed in *Industrial research*, Dunsheath. Other sources are listed in *Records and research in engineering and industrial science* and *Facts, files and action in business*, Holmstrom. A collection of such books, together with trade directories, the local Chamber of Commerce handbook, and the like, are a first step

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towards the systematic use of information sources. New guides, as they are published, can be noted from *Aslib Information*, and the collection can thus be maintained up to date. It may be useful to file the annual reports and one or two typical publications from various sources of information as a guide to their activities.

(c) *Published material.* Much information which interests managers and engineers is in the form of printed matter. The use of this information is complicated by two factors. The first is the large number of disseminating sources and the many libraries in which information is retained. The second is the difficulty in handling printed matter because of its volume, the diversity of publishing methods used, and because the material is mainly in the form of pamphlets, bulletins and periodicals. This sets problems in filing and library technique which are peculiar to this field. The executive, however, having identified the information sources of interest to him can find out how they publish and arrange to receive their reports. He can acquaint himself with the abstracts which cover his field. He can note the main bibliographical aids to locating specific articles. There seem to be few engineers, for instance, who are aware that virtually all technical articles are indexed in *Industrial arts index* and in *Engineering index*. The executive can also note the facilities provided by specialist libraries such as those of the Research and Development Associations, the Public Libraries, the libraries of Learned and Professional Societies, and the National Libraries, e.g., the Science Museum Library, the Patent Office Library, and the Technical Information and Documents Unit of the D.S.I.R.

(d) *The information officer.* Information work is a technique. It is a technique in the same sense as drafting or motion study. There is no reason why any person who builds up a collection of guide books to specialist sources of information and takes the trouble to acquire an elementary knowledge of publishing methods should not benefit from the systematic use of information. But information work, like other techniques, requires specialists. These specialists are the Information Officers. Their services are needed if management is to obtain full and continuing benefit from the use of specialist organizations and published material as sources of information. The information officer has to sift out continually from the existing mass of information, which is constantly being augmented, the material which has application in his own organization. He classifies and indexes this material in terms of the needs of the users of his library. He then supplies this information either to meet the demands of enquirers or, more important, on his own initiative to stimulate creative work. The final selection of the information applicable and its interpretation and use is, of course, the work of managers, production engineers and other executives. In industry the work of many information officers is biased towards the handling of scientific and technical information. Industrial research may involve library research, experiment or calculation alone or in combination. The information officer plays his part in this work alongside the project or development engineer and the designer. There are signs, however, that as the value

of information work becomes apparent to management the scope of the work is widening. Information officers are now being called upon to use their special library techniques and knowledge of information sources to assist management in many different fields.

CONCLUSIONS

The use of information is basically a problem in management organization. The general management function must, in addition to co-ordinating the functional activities of the company, ensure communication between these activities and specialist bodies and sources of information outside the company. The importance of the functional activities varies in different industries and at different periods. In the same fashion, emphasis on the particular contacts to be maintained with outside sources will likewise alter. The organizational structure of companies differs with size and the personalities concerned. For the same reason, the steps which are taken to ensure the flow of information to executives will vary among companies. The extent to which management appreciates the importance of information work will also affect the level to which information techniques are developed.

Management must forecast, plan, co-ordinate and control the business activities. To do this effectively the views, opinions and practices of shareholders, suppliers and employees must be known. In addition the effect of current and anticipated social and technical changes must be assessed. The systematic use of information provided by marketing, financial, supply and labour organizations, and the agencies of social and technical change can do much to aid individual managers who make their own contacts with these information sources. A thorough survey of Company needs is, however, likely to disclose the need to develop the information function as a formal management activity. In such a survey the requirements of the company are balanced against the available industrial, regional and national sources of information. The systematic use of these sources can only be fully obtained if the information function is the concern of a full-time information officer.

THOUGHTS ON INTERLIBRARY LENDING

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A PHENOMENON, most challenging and, at the same time, most gratifying for every librarian, is the determined trend toward total bibliographical control. In particular, in the field of applied science, these efforts are mirrored in a considerable literature, which in heterogeneous subject fields show many parallelisms of thought and method toward the ultimate aim : to bring together all available information on a certain subject to the person interested, in the shortest possible time and at the lowest possible cost. It stands to reason that in these times of rapidly expanding knowledge not one library or centre of information can reasonably be expected to contain and make available all published material even in a segment of applied science, as, e.g., aeronautics. The amount of material is too large, and its increase in seemingly more than geometric proportions precludes its purposeful handling by one single centre and renders the cost of operation irrational. On the other hand, well planned and carefully organized co-operation between libraries which hold special material and are expertly staffed in the special areas will come closest to the realization of ideal bibliographic control.

An excellent example of a well functioning microcosm is the organization of the New York University Libraries. Due to its historical development and the many geographical peculiarities, New York University's two Liberal Arts Colleges, three Graduate Schools, nine Professional Schools and Colleges, and the Division of General Education are scattered over wide areas within the city. The libraries which followed this pattern developed over the decades and years holdings which reflected study, research and teaching needs exclusively for their own faculty and students over the entire periods. The acquisition programme comprised all types of material, even in otherwise totally unrelated fields, if only the respective request was presented. What developed was a tremendous amount of duplication of material occasionally so sporadically used that one book, or set of periodicals, in *one* library alone would have been more than sufficient. It also meant cluttering up of precious shelving space badly needed for material in present demand, a fact which necessitated either costly shifting of stacks, or scattering related material wherever chance permitted its shelving. The inconvenience for the student and researcher was obvious ; so also was the expense for the library. In these days of rapidly expanding printed material and the ever increasing prices with which library budgets could not keep pace, it became obvious that comprehensive changes had to be brought about. The Director of the Libraries then decided to build the New York University Libraries from

seven individual libraries, all with their own catalogues, holdings, individual book buying programmes, budgetary allotments and routines, into one powerful unit which abolished parochial concepts and established instead an inter-related and far-reaching integration. An intramural union list of 'Serials currently received in the Libraries of New York University' was made available to each library, and was also distributed in sufficient numbers of copies to the faculties to show at one glance which publications were held by which libraries. This very expedient function of the serials list was supplemented by the possibility of checking the union catalogue of the university, kept at the Washington Square Library, immediately through a simple telephone call. And finally, an interlibrary-loan system was introduced which aimed at speed, reliability and low cost.

The effect of this reorganization has been most gratifying. Instead of administering a collection mirroring the historical development of the individual school and, therefore, overloaded with obsolete material, each librarian now is in a position to locate and make available (with very few exceptions) any material acquired by any one of the New York University Libraries, in exactly the same way as he handles the holdings of the library which he serves. Very often the union catalogue or the intramural list of serials currently received need not even be consulted. A telephone call to the librarian in whose field this subject most likely will be covered is sufficient, and—very important—this might provide for the searcher the most pleasant by-product, that the librarian of the approached library in his well-known specialization might locate, or suggest additional pertinent material. Unnecessary duplication is avoided because only the library which has the apparent and logical need for a publication will acquire it. Thus urgently needed funds are available for the acquisition of important material instead of the continuation of a subscription to a periodical which, a decade ago, might have interested a faculty member for purposes of his own, and which now constitutes for the library only a painful expenditure and an encumbrance on the shelves. The intramural interlibrary-loan works very promptly. It arrives through the regular messenger service and in urgent cases through a special messenger. Lending procedures are identical with those of the lending library, and record keeping is kept at a satisfactory minimum.

There is no intelligible reason why this system, so excellently functioning within the structure of New York University (a well satisfied faculty and student body bear witness to its successful operation), could not be adopted into other organizational structures. Three elements seem to constitute the condition of its satisfactory operation: A reliable union catalogue, organized distribution of subject specialization and simplified, standardized interlibrary-loan procedures.

The report of the working party of the Aslib Aeronautical Group concerning the union catalogue summarizes a very serious effort.

As to the distribution of subject specialization, the Farmington Plan could serve as an excellent example of the voluntary acceptance of a pattern of library acquisitions in pre-decided subject fields. It 'proposes

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that libraries having research collections join in co-operative undertaking to bring to this country and make available through one of the co-operating libraries at least one copy of every book and pamphlet, published anywhere in the world following the effective date of the agreement, that might reasonably be expected to have interest to a research worker in America. It is further proposed that each item so acquired shall be catalogued promptly and listed in the Union Catalogue at the Library of Congress'. (Keyes D. Metcalf, The Farmington Plan, in *Harvard Library Bulletin*, vol. 2, no. 3, of Autumn, 1948.)

The obvious effect of the Plan, based on the principle of co-operation between the member-libraries, will be a further growth of interlibrary lending. To-day it is not only a working reality, but recommendations have been made to extend the co-operative acquisition and responsibility to additional countries and more types of publications. There is no reason why its pattern, successful on so broad a basis, should not be applicable to specialized interests, e.g., the Aeronautical Group.

It is rather the third element, interlibrary lending, which should be considered in this connection. Since the publication of the Interlibrary Loan Code by the American Library Association in 1940, few new co-operative developments are discernible towards normalization and standardization. This fact should come as a surprise because the Code, considered lacking liberality and elasticity a short time after its promulgation, became obsolescent and insufficient in many an aspect ever since. Its promulgated text constitutes a scheme based on experience and opinion, useful indeed in bearing much practical suggestion for the business of interlibrary lending. Yet a close look at to-day's practices reveals that almost every library in the United States has its more or less individual set of rules and routines, and interpretations of the Code.

Frequently the condition is found that the material lent must be used only in the building of the borrowing library ; the lending periods vary from library to library ; occasionally there is a reluctance discernible to sending the requested material outside the country or, by insisting that the requested material be fetched and returned by messenger (thus unconditionally excluding transportation by mail or express even beyond a small geographical area) ; some institutions refuse interlibrary-loans, but either give access to the material in their own premises or are ready to procure microfilm or photostat at cost. No doubt, all these regulations have their practical and theoretical *raisons d'être*. But it also follows that in order to maintain an efficient and reliable relationship to all potential contacts, it is imperative to keep a set of the individual rules and routines on file, and to watch carefully that none of them be violated. Of course, the librarians will see to that and will urge the researcher for whose use the loan request was made, to comply. However, for the latter, it might mean that he will be rushed through the material or that by applying for extension or modifications the already very high cost of each interlibrary transaction will be further increased through additional correspondence and records.

The request for a microfilm copy, if loan is excluded, may involve

delay to such extent as to make the use of the requested material expendable.

Where borrowing by mail or express is excluded, two messenger trips to the lending library will add disproportionate cost. If the researcher is expected to visit the holding library, the disadvantages for him are apparent; a great waste of precious time and inconvenience of having to consult a potentially complex reference without the benefit of the respective material assembled in his own library or laboratory.

If the approached library replies that it does not have the desired publication very precious time is lost if the requesting librarian receives only the negative information and then has to contact other libraries.

The restriction of the use of material loaned to the building of the borrowing library might mean great hardship or even uselessness for research conducted in the laboratory where all the models, designs and literature are assembled, where experiments or calculations can be conducted only if and when immediate access is available to facts, data and information on the respective phase.

In its point 3, the Interlibrary-Loan Code of the American Library Association lists among material which should not be requested, books in print which can be readily purchased. Suppose a Swedish book, still in print, yet expensive, and to be ordered from abroad, contains an interesting chapter. It would arrive much later than if it could be obtained through interlibrary-loan. Though it might contain only a small detail of information for an otherwise totally unrelated research project, once it has been accessioned, it will have to be classified, catalogued and will clutter for all future time precious shelf space in a heterogeneous collection. It might have been in stacks of another library which acquired it under the terms of the Farmington Plan, where it well fitted into the specific subject area and could have been loaned to the requesting library with additional valuable suggestions for related or even better material. We all know the often observed phenomenon that even scholars in their own field, are most appreciative if the librarian draws their attention to material of which they had no knowledge (e.g., foreign reports).

A researcher, interested in a dissertation, might be informed by the holding library that the loan may be granted only upon the permission in writing of the author—a potentially decisive delay, particularly when the author has moved to another domicile, unknown to the lending library.

‘The resources of even the largest libraries have been strained almost to the breaking point by attempts to acquire ever-increasing masses of research material and to meet the needs of those who use such material with no corresponding increase in staff and funds. Co-operation—pooling resources—was the only answer.’

In these words from the *Annual report of the Librarian of Congress* (for the fiscal year ending 30th June, 1952), the present situation and its remedy are well described. One of the most significant contributions

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towards this co-operation is interlibrary-loan service. Ever increasing statistics alone should bear eloquent testimony to its importance.

'Interlibrary-loan requests were received from 1,595 libraries, including seventy-five outside the United States. The total number of volumes and pieces dispatched to these libraries was 32,000 . . .'

says the above-mentioned report of the Librarian of Congress.

In view of facts and experiences, therefore, the question arises if it is not now the time to start on a national and international basis as well, a major effort of organization designed to rejuvenate obsolescent codes and amalgamate a multitude of rules and routines into one uniform, generally accepted *modus procedendi*, tailored to present-day concepts of interlibrary co-operation, geared to its human and material resources, and aiming at the ideal of total bibliographical control. But the preparatory steps must be the individual efforts of every single professional group to survey, evaluate and experiment all features and details, peculiar to its field. The aeronautical library caters to a specific type of clientele with specific resources, organizations, geographical distribution, financial endowments, trends and professional interest, different from any other engineering library, and while a number of parallel experiences will result in a wealth of parallel thought and rule, each branch of other professions will have to avail itself of the opportunities and to overcome the difficulties inherent in its specific area.

The establishment of a Working Party of the Aeronautical Group on Interlibrary-Loans, therefore, would seem to be not only a necessity in that important field, but also a very useful complemental addition to the work of the already appointed working parties, in particular, those on abstracts and on a union catalogue of periodicals and reports. It seems most logical that a group of expert librarians with an intimate knowledge of subject, resources and needs, should be best equipped to arrive at the most reasonable and useful distribution of material to be acquired and processed, secure the co-operation of other libraries with pertinent or interesting specialized holdings, and survey the field of potentially uncovered details or developments with an eye to early and speedy inclusion.

The location of needed material can be facilitated beyond the union catalogue, by addressing an interlibrary-loan request to the library known to hold material in that special field.

A novel proviso might be studied and inserted in an aeronautics interlibrary-loan code : to make it the professional duty of the librarian who cannot fill the request either because the desired publication is in use or lost or otherwise unavailable, to forward the request without delay to another library or libraries, where he reasonably may expect compliance, thus preventing increasing of cost, wasting of time and epistolary intercourse.

Forms of correspondence and records, codes for telegraphic requests and norms for such over the telephone could be devised, in order to cut cost and speed performance.

Loan periods should be discussed ; and also the question of the authorization of the librarian by the authors of doctoral dissertations to interlibrary-loan, to be obtained by the library when the thesis is deposited. Desirability and cost of microfilm copy or photostat instead of physical loan should be normalized. Authorization of the borrowing librarian to permit the publication lent to leave the library building when, in good faith, he would allow it for his own holdings, might be an excellent idea. Periodical surveys of interlibrary-loan activities should be planned in order to keep abreast of all developments and changes, and to make the necessary adjustments without loss of time or funds ; and to stimulate the co-operating libraries to make suggestions for further improving service.

SERVICE DE DOCUMENTATION ET D'INFORMATION TECHNIQUE

BY G. FRENOT

Chef de Section, Service de Documentation et d'Information Technique de l'Aéronautique (SDIT)

*Second Annual Conference of the Aslib Aeronautical Group, Cranfield,
28th March, 1953*

A SURVEY of the different questions considered during the joint meeting of the Aslib Aeronautical Group and Royal Aeronautical Society on Documentation, held on 7th February, at the Institution of Civil Engineers, shows that the following main points were raised by the representatives of the Official Departments, Research Offices and Libraries who attended the conference.

- Research of documents
- Study of these documents
- Presentation and nature of the relevant abstracts
- Distribution in due course of the relevant information to the interested research workers
- Classification and filing
- Security
- Co-ordination of documentary activities
- Patents

All these points, which refer to the different duties of a documentation department, are, in fact, related to the general problem of organization and functioning of such a department.

This problem, and its solutions, has also been examined in France, where the bases and methods of a documentation and information department had already been studied and designed during the war by General Engineer Rouanet.

After the liberation, France had an urgent need for aeronautical information, and the French Air Ministry set up and developed the Service de Documentation et d'Information Technique (SDIT) in order to comply with documentation requirements. Since that time, this Department, taking into account experience and daily needs, has not ceased, on the impulse of its Director, General Engineer Rouanet, to improve its methods and efficiency.

The principles upon which the planning of the SDIT's activities has been carried out are the following :

All needs must be satisfied wherever they arise. This fact calls for the setting up of effective means for the utmost use of all documents, their reproduction and distribution.

A system of documentation has to meet the most varied requirements. It must, therefore, include a progression from the simple bibliographical references to the most detailed documentary studies.

In scientific and technical fields, the co-ordination of documentary activities is a sheer necessity in order to prevent the duplication of reports on the same subject, and to ensure to the aeronautical community the benefit of everyone's work.

The documentation system built on these principles is represented by the following phases:— Bibliographical references ; abstracts ; full texts ; synthetical information.

Experience has proved that engineers prefer bibliographical references to abstracts, for the following reasons : references which comprise a title and a short summary are more rapidly elaborated and contain no personal interpretation of the text which has been under study. Thus, such references must be collected and distributed as soon as possible. The original documents must be rapidly translated at the request of the interested research workers. Reproductions of full-text documents must be quickly made available.

In order to put into effect the planning of a documentary system, the SDIT has been set up with the following main functions :

- Research of technical data on every aeronautical subject and development of the necessary liaisons with foreign countries.

- Centralization of questions related to patents concerning aeronautical subjects.

- Maintenance and development of a scientific and technical library available for every interested person.

- Study of the contents of documentation received.

- Distribution of monthly bulletins containing the relevant information, for the benefit of research offices and official departments.

- Functioning of a translation section and co-ordination of translations relating to aeronautical matters.

- Functioning of a technical information section, with a special library.

- Drawing up of cards, for synthetical information keeping aircraft and equipment monographs up to date, establishing files for aircraft, and equipment in use by Air Forces.

- Functioning of a technical information bureau.

- Elaboration and distribution of synthetical reports with the assistance of the aircraft industry research departments.

- Reproduction and printing of documents : microfilms, photostats, enlargings, offset printings, typographic works, etc.

- Maintenance and running of a lecture-room provided with projection apparatus for films ; and a film library.

- Printing, storage, issue and sale of regulations and government technical publications for the Air Ministry.

In order to fulfil these functions, the SDIT comprises :

- A secretariat with a central type-writing office.

- A technical information bureau dealing with technical information, liaisons with foreign countries and with synthetical reports.

- A section dealing with patents specifications.

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A documentary group including of : a central library ; a section for summarizing reports ; a translation section ; a technical information section, including a special library.

A reproduction and distribution group including : the photostatprint workshops ; a drawing office ; a printing office ; a distribution section.

The activities and achievement of the different SDIT sections may be summarized as follows :

Technical information bureau

This bureau is in charge of all information relating to aeronautical matters. It takes part in organizing missions to foreign countries ; it suggests the type of information to be asked for ; deals with synthetical reports and remains in close touch with official and private aeronautical organizations.

Patents specification section

This section deals with the control of patents in conjunction with the French Patent Office. Its files amount to 30,000 card-indexed documents ; card indexing is done in accordance with a classification adopted by industry.

It is also entrusted with the patent filing processes on behalf of the French Government, the control and payment of annual fees, the private examinations and enquiries and with every case of litigation in matters affecting priorities. In 1946 the other technical directorates in the Ministry of National Defence decided to take up the methods used by this section. Since that time the patent control processes have been made in close co-operation with SDIT which carries out the whole necessary photographic reproductions.

Within the Ministry of National Defence, this section plays a leading part in studying and perfecting the peculiar patent legislation in this field.

Central library

This library contains more than 125,000 documents and receives 1,500 French and foreign technical publications monthly. It is annually consulted by 18,000 visitors and carries out 75,000 loans. Card-indexed references amount to 180,000. A general catalogue, catalogues by author and a subject-matter catalogue are at the disposal of readers, as well as card-indexes for periodicals and technical journals. The Central Library has also an important collection of microfilms which represents more than 30,000 documents. Working methods and equipment of the library have been constantly improved to meet the unceasingly growing needs of users (extension of filing equipment; recording of received documents with check tables, documents on loan are controlled by individual filing, etc. . . .).

Summarizing section

For six years this section has compiled and issued a Monthly Bibliographical References Bulletin which gives about 900 references a month

and which is widely known in France and in foreign countries. For this purpose, the section has to analyse the whole documentation received by the SDIT with swiftness and accuracy and to put the resulting summaries into shape.

The regular issue of the Monthly Bulletin, the number of faithful French and foreign subscribers, as well as their spontaneous appraisal, show the wide interest in the work done by this section.

As a supplement to the Monthly Bibliographical Reference Bulletin the SDIT also publishes *Docaero*, a documentary publication which contains synthetical papers on technical topics of the day.

Translation section

This section monthly translates about 500,000 words. It is organized to make rapid translations about urgent matters and to help the Official Departments when an interpreter is needed.

Technical Information section

This section makes out synthesis cards on scientific and technical subjects related to aeronautical topics received by the SDIT or brought to its knowledge. It maintains and increases a Special Library (for unpublished documents) which at present contains 30,000 documents. Aircraft and equipment monographs and files (now 11,000 files and 72,000 cards) are kept up to date by this section which holds a microfilm collection of unpublished documents (approximately 3,000 strips and 350 reels).

Engineers belonging to about forty official Departments and Research Offices consult the section every day and get valuable assistance in their search for documents and technical information.

Reproduction and distribution

In order to ensure complete efficiency in documentary activities, the SDIT has at its disposal very important photographic and printing workshops with a drawing office. A distribution and sales section is also provided.

In 1952 this group made 500,000 reproductions on microfilm ; 200,000 miscellaneous photographic reproductions ; 13 million printings ; 1,800,000 reproductions by offset process ; 900,000 mimeograph copies or blue-prints. A number of workers, reaching 60 per cent. of the total SDIT staff, is required for that work.

The Lecture and Projection room of the SDIT is fitted with the most modern equipment (projection apparatus for sound films, for lantern slides and for epidiascopic projections, counter-proof equipment, sound recorders on films and wires, removable blackboards). The accommodation permits the rapid conversion of the room for lectures, classes, meetings, etc. It has a large film library (approximately 900 films of 16 and 35 mm.).

The SDIT 11 brochure, which includes an organization diagram, gives an accurate idea about the detailed organization of the different

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groups and sections of the SDIT. It contains photographs which show libraries, offices and workshops of the Department.

Let us now consider the main questions examined at the Aslib/Royal Aeronautical Society meeting and see how the SDIT in practice solves the relevant problems.

In order to meet *Security* requirements, the SDIT has separated into two parts the documentary activities relating to *published* and *unpublished* documents. The study and storage of these two kinds of documents are carried out by two different sections and libraries. The distribution of the relevant information is realized by the issuing of two different *bulletins* (Monthly Bulletin for published and Special Bulletin for unpublished documents, the latter being reserved for distribution within Air Technical Departments).

Special authorization is necessary for engineers to have access to unpublished documentation. These engineers have to comply with security regulations.

The Summarizing section, which is in charge of the study of published documents, and the Technical Information Bureau which deals with unpublished documents, make short *abstracts* which comprise : title, references, authors and a short summary. These summaries are indexed and classified. They are collected and issued in the Monthly Bulletin, for published, and in the Special Bulletin, for unpublished, documentation.

The relevant indexes are given by the SDIT *Classification* System, which includes all aeronautical activities. This classification has been set up with the collaboration of industry and Aeronautical Research Offices. It was proposed by the SDIT and accepted by these offices after several meetings with the SDIT representatives.

All information concerning a technical subject or a particular author is recorded on appropriate *synthesis-cards* (keyword-cards and author-cards).

This system permits the finding of a document or information by various ways on a particular or general subject. We have preferred this system to the mechanical process of perforated cards, because of its simplicity and because it allows information officers to be more efficient when they have to help the engineers on the occasion of a research.

The research worker who wants a document may borrow it from the *Library* concerned (Central Library for published, Special Library for unpublished documents). If he should want a *copy* of it, his request can be rapidly granted because of the efficient means of reproduction of the SDIT. *Translations* of foreign documents are made, at his request, by the Translation Section.

If he needs information about a technical subject, he is helped by the Head of the Section concerned or by his staff who know foreign languages (including English) and who are able to guide him in his research or to carry out every documentation work necessary for the collecting of technical references on this particular subject. On the other hand, the Section Head may ask for the elaboration of translations relating to up-to-date and interesting technical subjects.

In this case Section Heads and their staff act as *Information Officers*.

If necessary, they do everything possible to get the required information when it is not to be found in the files.

The people in charge of the libraries have only to classify and store the documents, to lend them and to check that they are given back at the proper time.

When there are several documents available concerning an interesting subject, *synthetical reports* are written, either by SDIT specialized engineers, or by highly qualified engineers from Air Technical Departments or Industry.

Studies relating to up-to-date subjects may be found in *Docasro*, which is a supplement of the Monthly Bulletin.

Other synthetical reports about important subjects are specially issued by the SDIT. They are made by engineers of Official Departments or Research Offices, or at the request of research workers.

Co-ordination is organized as follows :

A Translation-co-ordination Bureau issues *Weekly List*, comprising all information relating to the translations undertaken by aeronautical departments or private translation offices. Around 300 offices and departments belong to this organization, which prevents duplicating of translations.

Information concerning the published translations is given in the above-mentioned Monthly Bulletin. When an engineer wants information about translations, he calls this Bureau and gets an immediate answer.

On the other hand, close collaboration has been set up between Air Technical Departments and Research Offices of Industry. The engineers belonging to these departments and offices hold periodical meetings in order to avoid duplication of work.

At last a *Documentation-Exchange* has been organized by the SDIT with the M.O.S/TTB., the NACA and many foreign universities. This exchange concerns technical documents as well as scientific and aeronautical publications.

The methods used by the SDIT have been adopted by French Aeronautical Research Establishments (as the ONERA, for example). French contractors have set up documentation bureaux which maintain liaisons with the SDIT and remain in close touch with this department.

These methods have already permitted the saving of money by avoiding duplicate studies concerning important technical subjects. They are based upon the idea that co-ordination is to be preferred to centralization.

A documentation department centralizing all documents and information relating to aeronautical activities would be an enormous and heavy machine and would need plenty of material and a lot of engineers, technicians, employees and workers. A place like Hyde Park would not be sufficient for the buildings of such a department.

France has preferred the co-ordination system, which permits us to know and to disseminate the information and documents owned by other aeronautical bodies, as well as the documentation work undertaken and carried out by them.

THE NACA CLASSIFICATION SYSTEM—A CASE HISTORY

BY EUGENE B. JACKSON

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*Second Annual Conference of the Aslib Aeronautical Group, Cranfield,
28th March, 1953*

AERONAUTICAL research scientists of the National Advisory Committee for Aeronautics have in the last six years indexed 7,070 non-security classified NACA research reports under 458 different subject classification headings for a total of 18,619 subject entries. They further face the task of subject classifying over 400 similar research reports per year, plus the large number of security classified reports issued annually.

The story of how this NACA subject classification system developed, and how it withstood the more than 7,070 tests it has faced, will concern us here to-day.

Some fragmentary history on the organization of aeronautical research information will be in order first. We do not propose to go as far back as Leonardo da Vinci, though doubtless that genius had a system for filing his aeronautical sketches. We will content ourselves by beginning with the December, 1914, meeting of the Advisory Committee for Aeronautics (Great Britain) during the course of which a 'scheme of classification for . . . typed papers' was adopted. The scheme called for four main groups and a total of seventeen subdivisions. The main groups were : (a) Aerodynamics (and Hydrodynamics), (b) Structures and Materials, (c) Accessories, and (d) General Matters. A mixed notation of letters and numbers was used similar to those used to-day by the French Service de Documentation et d'Information Technique.

Three months after the above meeting the Congress of the United States passed an act creating the National Advisory Committee for Aeronautics 'to supervise and direct the scientific study of the problems of flight with a view to their practical solution'. One of the problems of the infant Committee was *not* the classification of its own reports, as you will readily see from the fact that it issued seven reports in its first year, five in its second, with the war years of 1917 and 1918 seeing eleven and twenty-five respectively. As late as the 1930's some researchers, still with NACA to-day, felt that they needed no subject list as they remembered all the NACA reports issued in their subject field. Pre-World War II staffs were small ; there was only one laboratory with relatively modest research facilities ; report reproduction was by hand methods—stencils typed by a central pool of report typists, figures hand drawn on stencils, office-type duplicators and hand assembly (with the only exception here, being the technical reports reproduced by letter press at the Government

Printing Office). Report distribution likewise was done manually, based on individual requests for documents or on the knowledge of those persons on the research staff who were interested in particular research reports.

Even the expansion of the NACA and the establishment of its two new laboratories in the 1939-40 period failed to alter significantly the research report production and distribution methods. Numerical lists of research reports were available upon request and the Superintendent of Documents issued price lists of the printed reports he had for sale. A significant step forward occurred in 1940 when an engineer at NACA Headquarters, to whom had been referred from time to time requests for information that the library could not fill, of his own volition prepared the first subject lists of NACA research reports for general distribution.¹ Mr. R. E. Littell, who is here with us to-day, arranged the publications thirteen years ago under fifteen main headings and forty sub-headings, which is a fourfold increase in main headings over the 1914 ACA list and a doubling of sub-headings over that earlier list. The compiler prepared these indexes by cutting out references from several copies of numerical lists of NACA publications, stapling these references to sheets of paper headed by the engineering-handbook-type headings evolved by Mr. Littell, with the resulting copy being prepared for publication by the typing pool. Mr. Littell had recommended publication of the indexes to the NACA director 'because of their value for acquainting engineers with the research of the committee in a form which indicates the scope of the research in a specific field, and because they provide a convenient alphabetical index to all phases of aeronautical research engaged in by the committee'.

There were no formal subject lists of NACA publications prepared during the World War II period, partly because nearly all NACA research reports were given a military security classification during this time. Announcement of new research reports was through the medium of a closely controlled and circulated periodic chronological list.

It became obvious in the immediate post-war period that NACA report preparation, production, announcement and distribution were going to have to be modernized. On the announcement phase, the great increase in prospective NACA 'customers' demanded that information about past and present NACA reports be available in handy form, capable of being used by persons new to the field of aeronautics as well as by veteran aeronautical researchers.

Pressures had built up at isolated points around the NACA for some kind of a logical organization of the existing NACA research reports. One of the more vocal groups were the members of the aerodynamics group at NACA Headquarters. They had been assigned, prior to November, 1945, the responsibility of preparing status and progress reports on research and taking steps toward co-ordinating laboratory effort in this subject field. They were at a loss as to the subject breakdown to be used but started using broad headings experimentally fitting them into categories, proceeded by a series of 'successive approximations', and

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had some sort of system ready at the proper time. The NACA Committee on Aerodynamics went on record early in 1946 as favouring the placement of index cards in all NACA publications which, of course, called for some sort of subject arrangement. The NACA Director received repeated requests from airframe and engine companies to photocopy the NACA library subject files. These requests were refused partly on the ground that those files were prepared by librarians ; used library terminology, and hence were not of great utility to the researcher. Then in May, 1946, the Cleveland Laboratory was asked by NACA Headquarters to start work on an index of non-security classified NACA publications issued to the end of 1946. The time was ripe for some positive over-all action. This action took the form of the establishment of a new division in NACA Headquarters.

The Division of Research Information was set up late in 1946 under the direction of an engineer-journalist, Mr. E. E. Miller, with the function of bringing about the modernizations mentioned earlier. This new Division naturally found itself right in the middle of the seething subject index—list of documents—index card problem. The Division made positive and vigorous efforts to interest all personnel of the NACA Headquarters engineering staff in the problem as a part of its admirable policy to increase the amount of participation by technical people in the technical information programme of the NACA.

Another principle of Mr. Miller's was to adopt the public relations approach to the NACA publications problem. This involved (1) improving the product, (2) marketing it, (3) issuing aids to the product's use. He was encouraged in the matter of aids by a letter from the Chairman of the NACA to the NACA Director pointing out the need for a day-to-day record of NACA publications.

The aerodynamics group previously mentioned, offered their informal index based, as a start, on these fields : aerodynamics, aerodynamic loads, propellers, vibration and flutter. These men used the terms that were then current. They offered the opinion that engineers would ask for documents either through the problem approach or the configuration (geometry) approach ; further, irrespective of which approach the theoretician or experimenter used first, the solution of his problem would call for him to also go to the other stage as well. Thus each approach was equally important. The aerodynamics group had adopted the principle of 'keeping it simple', adding further breakdowns only as they became necessary.

Co-ordination of the index headings which were going to be used for both the proposed 'master index' of the NACA non-security classified publications issued since 1915 and for the index cards to be included in the NACA publications in the future, proceeded under very high priority with much of the co-ordination with the NACA laboratories being by long-distance phone. Naturally the suggestions of each specialist emphasized his speciality in considerable detail, while the other 'unimportant' phases of aeronautical research he dismissed rather lightly. When final co-ordination time was at hand, the laboratory officials

accepted the NACA headquarters proposals with only very minor suggestions. They had been assured that the indexing system was to be a working system—they needn't be too concerned at what was adopted now as some kind of a start had to be made and future development of the system would take care of present inadequacies.

As the classification system finally evolved it had eleven main headings (aerodynamics, hydrodynamics, propulsion, structures, materials, meteorology, operating problems, instruments, research equipment and techniques, nomenclature, bibliographies and indexes), and 417 subdivisions.² An administrative decision had been made that the classification would only go to five levels of subdivision as a point of diminishing returns would be reached with greater subdivision. Other principles followed in the development of the index included: familiar, correct, current nomenclature should be used; simple numbering scheme needed (based on engineering handbook practices); form for form's sake is unimportant; reflect NACA committee and sub-committee structure as that revealed subject interests; consistency in subdivisions of various subject fields not required; tailored to needs of working technical people; covered only subjects represented in NACA publications. The engineers' determination to use their own approach and the resulting seeming lack of consistency and order in the finished classification scheme is a reflection of the states of the arts and the conglomeration of the sciences that form to-day's 'aeronautical science'.

Crash programmes were initiated at each laboratory in the summer of 1947 to index all non-security classified NACA research reports. The laboratories had been given an opportunity earlier to check and correct compilations of code numbers and titles of publications; after which NACA Headquarters assigned the documents on the basis of laboratory subject interest for classification. Research nearly ceased at the laboratories for a week (one laboratory director said he 'closed the doors') while over 1,500 research experts willingly sat down at long tables, received piles of NACA research reports in their speciality and classified them each by subject. Certain reports were deemed to be obsolete or not worthy of continued reference in future NACA publications—such documents were not listed in the 'master index'. At NACA Headquarters the cards from the three laboratories were merged, with the entries under each heading being arranged in chronological order. The resulting index³ was far from perfect, but it is difficult to cover twenty-two years' worth of one's publications in a couple of weeks time with amateur indexers.

In August, 1947, the laboratories were informed that all NACA research reports subsequent to September 15th, 1947, would have catalogue cards included in each copy of the paper. These cards would be printed four to the page and were to be cut out by the recipient. The cards were to be prepared by the report author and they would be subject to the same editorial review as the remainder of the manuscript. Each index card was to contain the following information: subject heading, subject heading decimal number, title, author, serial number, date,

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security classification, and 'a brief abstract of publication contents on the reverse side of index card'. The instructions continued : 'It is to be noted that the subject headings are concerned more with functions and processes than with components of aircraft and engines. This approach is deemed more appropriate to engineering consultation of NACA material. . . . If a publication is simply not indexable under the approved headings, the laboratory may apply . . . for approval to extend or amend the subject headings accordingly. It is deemed important, however, to maintain the number of headings at a minimum.' Later instructions mentioned that the most specific applicable headings should be assigned. Also the devices of adding 'S' to classification numbers of reports containing supersonic data and 'L' to those for data applicable to lightplane design were later adopted. Copies of the 1915-47 Index and the list of subject headings were distributed to all regular recipients of NACA research reports.

A furore arose immediately with librarians castigating the NACA for its 'inconsistent, illogical' index headings, while engineers wrote in expressing great satisfaction with them. The NACA Headquarters and laboratory libraries rejected the *NACA engineer's index* for library reference purposes and continued cataloguing NACA and other reports under quite detailed subject headings that had evolved since 1917, and continued subject classifying them with a cumbersome four-digit decimal classification of the same vintage. (One major objection of the NACA librarians was the limited scope—the documents they were receiving from over 1,000 sources covered wider fields than those of the NACA research reports.) Although the libraries' subject classification number has since been dropped and replaced by a simple accessions number, the problem of a system of classification and/or indexing that is both useful to, and usable by, the individual researcher as well as being detailed enough for, and comprehensible to, the reference librarian is a problem that still occupies us over seven years later. (For the last two years the NACA Headquarters' library has used both library and 'engineers' approach', depending upon the question at hand.)

In May, 1948, some minor changes in the classification headings were made, including the addition of a new main heading, 'Technical Summaries', and further subdivision of 'Research Techniques'. Author cards were included in the card sets in July, 1948. First steps towards a revised Index of Technical Publications were taken in September, 1948. This new Index would correct inconsistencies, improper subject classification and other defects in the earlier, hurried, Index as well as include publications that had been issued or declassified in the meantime. Suggestions as to revisions in the subject heading list were solicited, with this guidance being offered : while some new headings might have to be added, no presently existing ones would have to be eliminated ; also, 'the least-possible change in the basic structure will simplify the revision problem'.

The revised draft of classification headings was sent to the laboratories in May, 1949, and the new headings were adopted for publications on and after 15th September, 1949. The main changes in the index were to

be the addition of certain headings felt to be necessary and two basic changes brought about by reorganization in the NACA committee and Sub-committee structure, among other things. 'Aircraft Loads' were transferred to a new main heading, 'Aircraft Loads and Construction', with a subdivision of 'Landing Loads' being added. The other main change was the consolidation of the various accessory aspects of propulsion research into a new sub-head, 'Accessories and Accessory Functions', which included 'Fuel', 'Ignition', 'Lubricating', 'Starting' and 'Cooling Systems'. The resulting headings still used to-day number 458 and are listed on Fig. 1.

There was a later revision of the NACA classification system proposed in 1951, but it was not favourably considered by the NACA administration. The short time lapse since the 1949 revision and the radical changes suggested in the revision were the principal objections. The proposed revision had eighteen main headings and 458 subdivisions, and it differentiated between the pure and the applied sciences encountered in aeronautical research. However, as a result of informal conferences with the Atomic Energy Commission, Technical Information Division of the Library of Congress and the Central Air Documents Office (now Document Service Centre, Armed Services Technical Information Agency), a new card format featuring the use of two columns was adopted.

The recent attention given to aeronautical classification systems has caused the NACA to examine in some detail the classification system of 1949. A first step was to tabulate the entries assigned to each of the system's 458 subdivisions *to reveal the relative distribution throughout the system*. The entries used in the tabulation were those of the 7,070 non-security classified publications listed in the 1915-49 Index,⁴ the 1949-May 1951 Index⁵ and on catalogue cards for reports issued from June, 1951, to December, 1952. The results are shown beside each subject heading on Fig. 1. Cumulated entries under main headings vary from a low of 15 under 'Nomenclature' to a high of 9,073 under 'Aerodynamics', while similar totals for subheads vary from 0 for 'Vibration and Flutter, Propulsion Systems' (3.13) to 2,161 for 'Stability and Control' (1.8). Although it is obvious from Fig. 1 that headings like 'Instruments' need further subdivision, such factors as searching methods to be employed complicate the decision as to how populous a subhead must be before it requires further subdivision. If a 'rule of thumb' limit of 100 entries per subhead were to be adopted, for example, then 46 of the present 458 headings (or 10 per cent.) would require further subdivision. No decision has been made as yet as to the maximum entries which will be permitted in a subhead in any future revision of the NACA classification system.

A second step taken in the analysis of the system was the preparation of a chart showing comparisons of the first and second levels of classification with the nearest corresponding entries in the Classification Generale of the Service de Documentation et d'Information Technique and the Universal Decimal Classification. The chart (not reproduced here) showing the main divisions of the systems shows graphically the non-uniform

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scope of the systems, while the detailed portions of the chart show very great variation in level of subdivisions in the systems.

NACA 1st level : Average corresponding SDIT level—3rd
Average corresponding UDC level—5th

NACA 2nd level : Average corresponding SDIT level—4th
Average corresponding UDC level—7th

The third step taken was to send a questionnaire to the important recipients of NACA publications to learn how well the classification system and its catalogue cards were serving their needs. Those addresses currently receiving security classified NACA research reports were sent the questionnaire here attached as Fig. 3. Just over 800 questionnaires were mailed and as of March 4th the remarkable total of 641 had been returned (80 per cent.). The statistical results of the survey are shown on Fig. 2. Most of our replies came from technical people who had library service available, used that library to locate NACA reports and also made use of our cards. Most felt that the headings used on the cards were adequate and over 100 actually used the NACA classification scheme to organize non-NACA information. 239 offered suggestions, with the need for a more detailed breakdown being the most popular suggestion (by forty-five engineers and fourteen librarians), while seven engineers felt we had too many headings. Several commented on the form of the headings or the form of the catalogue cards used, and a few offered to discuss their opinions personally at the NACA's convenience.

The replies were tabulated on the basis of the respondent's employer and also on the varying combinations of replies to the first three questions. The percentages appear to be consistently favourable to the NACA classification system. The conclusion is that there is a need for a classification scheme for NACA 'customers' use employing the general characteristics of the present system, that such a system must be useful to and usable by both engineers and librarians, and that there is probably need for more detail in at least part of the system.

The next steps taken by the NACA depend partly upon the results of these Cranfield discussions. It is hoped that this narrative by a librarian of a classification system conceived, developed and utilized by aeronautical research scientists will be of orientation value to you.

REFERENCES

- ¹ NACA Index of Reports on Aeronautical Research. Washington, Government Printing Office, 1940. 25 pages, and NACA Index of Technical Notes on Aeronautical Research. (Washington, NACA), 1940. 31 pages.
- ² NACA Subject Headings for Index of NACA Publications, September, 1947. Washington, NACA, 1947. 31 pages.
- ³ NACA Index of NACA Technical Publications, 1915-47. Washington, NACA, 1947. 401 pages.
- ⁴ NACA Index of Technical Publications, 1915-49. Washington, NACA, 1949. 605 pages, and NACA Author Index to (the above). Washington, NACA, 1951. 27 pages.
- ⁵ NACA Index of NACA Technical Publications, 1949-May, 1951. Washington, NACA, 1952. 201 pages.

FIG. 1—CLASSIFICATION HEADINGS ASSIGNED UNCLASSIFIED NACA PUBLICATIONS THROUGH DECEMBER, 1952

18,619 entries made for 7,070 unclassified publications under 458 different classification headings.

(2.63 entries per publication.)

Classification Heading	Reports under this Heading	Cumulative totals under this Heading
I AERODYNAMICS	0	9073
I.1 Fundamental Aerodynamics	105	1333
I.1.1 Incompressible Flow	82	
I.1.2 Compressible Flow	134	
I.1.2.1 Subsonic Flow	127	
I.1.2.2 Mixed Flow	97	
I.1.2.3 Supersonic Flow	220	
I.1.3 Viscous Flow	83	
I.1.3.1 Laminar Flow	116	
I.1.3.2 Turbulent Flow	130	
I.1.3.3 Jet Mixing	48	
I.1.4 Aerodynamics with Heat	26	
I.1.4.1 Heating	24	
I.1.4.2 Heat Transfer	77	
I.1.4.3 Additions of Heat	40	
I.1.5 Flow of Rarefied Gases	7	
I.1.5.1 Slip Flow	1	
I.1.5.2 Free Molecule Flow	16	
I.2 Wings	6	2871
I.2.1 Wing Sections	22	
I.2.1.1 Section Theory	153	
I.2.1.2 Section Variables	38	
I.2.1.2.1 Camber	53	
I.2.1.2.2 Thickness	72	
I.2.1.2.3 Thickness Distribution	50	
I.2.1.2.4 Inlets and Exits	10	
I.2.1.2.5 Surface Conditions	72	
I.2.1.3 Designated Profiles	137	
I.2.1.4 High Lift Devices	14	
I.2.1.4.1 Plain Flaps	48	
I.2.1.4.2 Split Flaps	30	
I.2.1.4.3 Slotted Flaps	65	
I.2.1.4.4 Leading Edge Flaps	11	
I.2.1.4.5 Slots and Slats	20	
I.2.1.5 Controls	9	
I.2.1.5.1 Flap Type	94	
I.2.1.5.2 Spoilers	10	
I.2.1.6 Boundary Layer	120	
I.2.1.6.1 Characteristics	14	
I.2.1.6.2 Control	3	
I.2.1.7 Reynolds Number Effects	56	
I.2.1.8 Mach Number Effects	115	
I.2.1.9 Wake	1	
I.2.2 Complete Wings	28	
I.2.2.1 Wing Theory	236	
I.2.2.2 Wing Variables	56	
I.2.2.2.1 Profiles	67	
I.2.2.2.2 Aspect Ratio	137	
I.2.2.2.3 Sweep	187	
I.2.2.2.4 Taper and Twist	98	
I.2.2.2.5 Inlets and Exits	14	
I.2.2.2.6 Surface Conditions	45	
I.2.2.2.7 Dihedral	3	
I.2.2.3 High Lift Devices	11	
I.2.2.3.1 Trailing Edge Flaps	155	
I.2.2.3.2 Slots and Slats	47	
I.2.2.3.3 Leading Edge Flaps	3	

Classification Heading		Reports under this Heading	Cumulative totals under this Heading
1.2.2.4	Controls	22	
1.2.2.4.1	Flap Type	125	
1.2.2.4.2	Spoilers	40	
1.2.2.4.3	All-Movable	1	
1.2.2.5	Reynolds Number Effects	56	
1.2.2.6	Mach Number Effects	168	
1.2.2.7	Wake	63	
1.2.2.8	Boundary Layer	25	
1.2.2.8.1	Characteristics	0	
1.2.2.8.2	Control	1	
1.3	Bodies	33	351
1.3.1	Theory	90	
1.3.2	Shape Variables	38	
1.3.2.1	Fineness Ratio	29	
1.3.2.2	Cross Section	13	
1.3.2.3	Thickness Distribution	15	
1.3.2.4	Surface Conditions	16	
1.3.2.5	Protuberances	28	
1.3.3	Canopies	17	
1.3.4	Ducted Bodies	21	
1.3.4.1	Nose Shape	14	
1.3.4.2	Tail Shape	5	
1.3.4.3	Side Inlets	2	
1.3.4.4	Side Exits	3	
1.3.5	Hulls	27	
1.4	Internal Aerodynamics	34	519
1.4.1	Air Inlets	15	
1.4.1.1	Nose, Central	31	
1.4.1.1.1	Propeller-Spinner-Cowl Combinations	0	
1.4.1.1.2	Subsonic	2	
1.4.1.1.3	Supersonic	5	
1.4.1.2	Nose, Annular	21	
1.4.1.3	Wing Leading Edge	16	
1.4.1.4	Side	4	
1.4.1.4.1	Scoops	16	
1.4.1.4.2	Submerged	3	
1.4.2	Ducts	34	
1.4.2.1	Diffusers	44	
1.4.2.1.1	Subsonic	5	
1.4.2.1.2	Supersonic	9	
1.4.2.2	Nozzles	50	
1.4.2.3	Pipes	28	
1.4.2.4	Bends	17	
1.4.3	Exits	24	
1.4.4	Jet Pumps and Thrust Augmentors	13	
1.4.5	Cascades	41	
1.4.5.1	Theory	17	
1.4.5.2	Experiment	6	
1.4.6	Fans	37	
1.4.7	Boundary Layer	34	
1.4.7.1	Characteristics	9	
1.4.7.2	Control	4	
1.5	Propellers	40	726
1.5.1	Theory	113	
1.5.2	Design Variables	17	
1.5.2.1	Blade Sections	68	
1.5.2.2	Solidity	57	
1.5.2.3	Pitch Distribution	57	
1.5.2.4	Blade Planform	34	
1.5.2.5	Mach Number Effects	41	
1.5.2.6	Pusher	20	
1.5.2.7	Dual Rotation	32	
1.5.2.8	Interference of Bodies	88	
1.5.2.9	Pitch and Yaw	31	
1.5.2.10	Diameter	2	

(FIG. 1—Contd.)

Classification Heading		Reports under this Heading	Cumulative totals under this Heading
1.5.3	Designated Types	30	
1.5.4	Slipstream	72	
1.5.5	Selection Charts	0	
1.5.6	Operating Conditions	24	
1.5.7	Propeller-Spinner-Cowl Combinations	0	
1.6	Rotating Wings	2	144
1.6.1	Theory	59	
1.6.2	Experimental Studies	9	
1.6.2.1	Power-Driven	43	
1.6.2.2	Autorotating	31	
1.7	Aircraft	8	949
1.7.1	Airplanes	11	
1.7.1.1	Components in Combination	45	
1.7.1.1.1	Wing-Fuselage	67	
1.7.1.1.2	Wing-Nacelle	39	
1.7.1.1.3	Tail-Wing and Fuselage	45	
1.7.1.1.4	Propeller and Jet Interference	22	
1.7.1.1.5	External Stores	3	
1.7.1.2	Specific Airplanes	150	
1.7.1.3	Performance	163	
1.7.2	Missiles	12	
1.7.2.1	Components in Combination	4	
1.7.2.1.1	Wing-Body	9	
1.7.2.1.2	Tail-Body	4	
1.7.2.1.3	Jet Interference	4	
1.7.2.1.4	Wing-Tail-Body	1	
1.7.2.2	Specific Missiles	6	
1.7.3	Rotating Wing Aircraft	3	
1.7.3.1	Autogyros	25	
1.7.3.2	Helicopters	74	
1.7.4	Scaplanes	4	
1.7.4.1	General Studies	14	
1.7.4.2	Specific Types	40	
1.7.5	Airships	51	
1.7.6	Biplanes and Triplanes	135	
1.8	Stability and Control	31	2161
1.8.1	Stability	13	
1.8.1.1	Static	31	
1.8.1.1.1	Longitudinal	213	
1.8.1.1.2	Lateral	131	
1.8.1.1.3	Directional	99	
1.8.1.2	Dynamic	55	
1.8.1.2.1	Longitudinal	105	
1.8.1.2.2	Lateral and Directional	131	
1.8.1.2.3	Damping Derivations	123	
1.8.2	Control	22	
1.8.2.1	Longitudinal	172	
1.8.2.2	Lateral	222	
1.8.2.3	Directional	87	
1.8.2.4	Airbrakes	15	
1.8.2.5	Hinge Moment	153	
1.8.2.6	Automatic	15	
1.8.3	Spinning	94	
1.8.4	Stalling	193	
1.8.5	Flying Qualities	184	
1.8.6	Mass and Gyroscopic Problems	15	
1.8.7	Tumbling	0	
1.8.8	Automatic Stabilization	17	
1.9	Aeroelasticity	14	14
1.10	Parachutes	5	5
2	HYDRODYNAMICS	1	577
2.1	Theory	63	63
2.2	General Arrangement Studies	52	52

(FIG. 1—Contd.)

Classification Heading		Reports under this Heading	Cumulative totals under this Heading
2.3	Seaplane Hull Variables	27	235
2.3.1	Length-Beam Ratio	33	
2.3.2	Deadrise	34	
2.3.3	Steps	38	
2.3.4	Afterbody Shape	38	
2.3.5	Forebody Shape	47	
2.3.6	Chines	18	
2.4	Specific Seaplanes and Hulls	77	77
2.5	Lateral Stabilizers	2	9
2.5.1	Wing-Tip Flow	7	
2.6	Planing Surfaces	36	36
2.7	Hydrofoils	18	18
2.8	Surface Craft	6	6
2.9	Ditching Characteristics	15	15
2.10	Stability and Control	8	65
2.10.1	Longitudinal	49	
2.10.2	Lateral	5	
2.10.3	Directional	3	
3	PROPULSION	0	2934
3.1	Complete Systems	19	433
3.1.1	Reciprocating Engines	49	
3.1.1.1	Spark-Ignition Engines	100	
3.1.1.2	Compression-Ignition (Diesel) Engines	60	
3.1.2	Reciprocating Engines-Turbines	6	
3.1.2.1	Turbosupercharged Engines	12	
3.1.2.2	Compound Engines	31	
3.1.2.3	Gas Generator-Turbine Engines	11	
3.1.3	Turbo-Jet Engines	22	
3.1.4	Turbo-Propeller Engines	22	
3.1.5	Ducted Propeller Engines	5	
3.1.6	Pulse Jet Engines	15	
3.1.7	Ram Jet Engines	13	
3.1.8	Rocket Engines	13	
3.1.9	Jet-Driven Rotors	5	
3.1.10	Nuclear Energy Systems	4	
3.1.11	Miscellaneous Engines	18	
3.1.12	Comparison of Engine Types	28	
3.2	Control of Engines	18	435
3.2.1	Charging and Control of Reciprocating Engines	196	
3.2.1.1	Spark-Ignition Engines	31	
3.2.1.2	Compression-Ignition Engines	55	
3.2.1.3	Compound Engines	86	
3.2.2	Control of Turbojet Engines	27	
3.2.3	Control of Turbine-Ramjet Engines	7	
3.2.4	Control of Turbine-Propeller Engines	8	
3.2.5	Control of Pulse-Jet Engines	2	
3.2.6	Control of Ramjet Engines	2	
3.2.7	Control of Rocket Engines	2	
3.2.8	Control of Gas Generator Engines	1	
3.3	Auxiliary Booster Systems	1	40
3.3.1	Reciprocating Engines	7	
3.3.2	Gas Turbines	4	
3.3.2.1	Liquid Injection	13	
3.3.2.2	Afterburning	10	
3.3.2.3	Bleed-off	5	
3.3.3	Rocket Assist	0	
3.4	Fuels	27	322
3.4.1	Preparation	17	
3.4.2	Physical and Chemical Properties	79	
3.4.3	Relation to Engine Performance	36	
3.4.3.1	Reciprocating Engines	14	
3.4.3.1.1	Spark-Ignition	110	

(FIG. 1—Contd.)

Classification Heading		Reports under this Heading	Cumulative totals under this Heading
3.4.3.1.2	Compression-Ignition (Diesel)	15	
3.4.3.2	Turbine Engines, Ram Jets and Pulse Jets	11	
3.4.3.3	Rockets (Includes Fuel and Oxidant)	5	
3.5	Combustion and Combustors	13	334
3.5.1	General Combustion Research	83	
3.5.1.1	Laminar-Flow Combustion	12	
3.5.1.2	Turbulent-Flow Combustion	9	
3.5.1.3	Detonation	5	
3.5.1.4	Effects of Fuel Atomization	6	
3.5.1.5	Reaction Mechanisms	11	
3.5.1.6	Ignition of Gases	10	
3.5.2	Effect of Engine Operating Conditions and Combustion Chamber Geometry	27	
3.5.2.1	Reciprocating Engines	27	
3.5.2.1.1	Spark-Ignition Engines	60	
3.5.3.1.2	Compression-Ignition (Diesel) Engines	40	
3.5.2.2	Turbine Engines	13	
3.5.2.3	Ram-Jet Engines	9	
3.5.2.4	Pulse Jet Engines	3	
3.5.2.5	Rocket Engines	6	
3.6	Compression and Compressors	33	291
3.6.1	Flow Theory and Experiment	47	
3.6.1.1	Axial Flow	76	
3.6.1.2	Radial Flow	51	
3.6.1.3	Mixed Flow	31	
3.6.1.4	Positive Displacement	9	
3.6.2	Stress and Vibration	26	
3.6.3	Matching	18	
3.7	Turbines	12	173
3.7.1	Flow Theory and Experiment	28	
3.7.1.1	Axial Flow	43	
3.7.1.2	Radial Flow	9	
3.7.1.3	Mixed Flow	10	
3.7.2	Cooling	24	
3.7.3	Stress and Vibration	34	
3.7.4	Matching	13	
3.8	Friction and Lubrication	7	267
3.8.1	Theory and Experiment	31	
3.8.1.1	Hydrodynamic Theory	17	
3.8.1.2	Chemistry of Lubrication	37	
3.8.1.3	Surface Conditions	46	
3.8.2	Sliding Contact Surfaces	26	
3.8.2.1	Sleeve Bearings	20	
3.8.2.2	Cylinder and Piston Mechanisms	25	
3.8.2.3	Slipper Plate Bearings	1	
3.8.2.4	Kingsbury and Mitchell Bearings	0	
3.8.3	Rolling Contact Surfaces	8	
3.8.3.1	Anti-Friction Bearings	13	
3.8.4	Sliding and Rolling Contact Surfaces	9	
3.8.4.1	Gears	5	
3.8.5	Lubricants	12	
3.9	Heat Transfer	43	251
3.9.1	Theory and Experiment	88	
3.9.1.1	Cascades	1	
3.9.2	Heat Exchanges	62	
3.9.2.1	Radiators	32	
3.9.2.2	Intercoolers	16	
3.9.2.3	Aftercoolers	2	
3.9.2.4	Regenerators	5	
3.9.2.5	Oil Coolers	2	
3.10	Cooling of Engines	10	231
3.10.1	Reciprocating Engines	63	
3.10.1.1	Liquid Cooled	13	
3.10.1.2	Air Cooled	123	

(FIG. 1—Contd.)

		227	
Classification Heading		Reports under this Heading	Cumulative totals under this Heading
3.10.2	Gas Turbine Systems	13	
3.10.3	Ram Jets	2	
3.10.4	Pulse Jets	0	
3.10.5	Rockets	2	
3.11	Properties of Gases	32	44
3.11.1	Kinetic	4	
3.11.2	Thermodynamic	8	
3.12	Accessories and Accessory Functions	0	114
3.12.1	Fuel Systems	0	
3.12.1.1	Spark-Ignition Engines	85	
3.12.1.2	Compression-Ignition Engines	0	
3.12.1.3	Compound Engines	0	
3.12.1.4	Turbojet Engines	5	
3.12.1.5	Turbine-Propeller Engines	1	
3.12.1.6	Pulse-Jet Engines	0	
3.12.1.7	Ramjet Engines	0	
3.12.1.8	Rocket Engines	5	
3.12.2	Ignition Systems	7	
3.12.3	Starting Systems	0	
3.12.4	Lubrication Systems	10	
3.12.5	Cooling Systems	1	
3.13	Vibration and Flutter	0	0
4	AIRCRAFT LOADS AND CONSTRUCTION	0	2430
4.1	Loads	15	
4.1.1	Aerodynamic	5	
4.1.1.1	Wings	69	
4.1.1.1.1	Steady Loads	128	
4.1.1.1.2	Manoeuvring	56	
4.1.1.1.3	Gust Loads	96	
4.1.1.2	Tail	14	
4.1.1.2.1	Steady Loads	27	
4.1.1.2.2	Manoeuvring	38	
4.1.1.2.3	Buffeting and Gust	14	
4.1.1.3	Fuselage, Nacelles and Canopies	56	
4.1.1.4	Rotating Wings	9	
4.1.1.5	Aceroelasticity	10	
4.1.2	Landing	2	
4.1.2.1	Impact	43	
4.1.2.1.1	Land	7	
4.1.2.1.2	Water	16	
4.1.2.2	Ground-Run	1	
4.1.2.2.1	Land	1	
4.1.2.2.2	Water	1	
4.1.2.3	Pre-Landing Conditions	2	
4.2	Vibration and Flutter	29	173
4.2.1	Wings and Ailerons	68	
4.2.2	Tails	9	
4.2.2.1	Elevators and Rudders	4	
4.2.2.2	Tab	2	
4.2.3	Bodies	15	
4.2.4	Propeller, Fans and Compressors	32	
4.2.5	Rotating Wing Aircraft	14	
4.3	Structures	0	1646
4.3.1	Columns	12	
4.3.1.1	Tubular	14	
4.3.1.2	Beams	34	
4.3.1.3	Sections	52	
4.3.2	Frames, Gridworks and Trusses	79	
4.3.3	Plates	9	
4.3.3.1	Flat	25	
4.3.3.1.1	Unstiffened	78	
4.3.3.1.2	Stiffened	78	

(FIG. 1—Contd.)

Classification Heading		Reports under this Heading	Cumulative totals under this Heading
4.3 3.2	Curved	0	
4.3.3.2.1	Unstiffened	17	
4.3.3.2.2	Stiffened	31	
4.3.4	Beams	79	
4.3.4.1	Box	70	
4.3.4.2	Diagonal Tension	8	
4.3.5	Shells	16	
4.3.5.1	Cylinders	9	
4.3.5.1.1	Circular	87	
4.3.5.1.2	Elliptical	11	
4.3.5.2	Boxes	12	
4.3.6	Connections	4	
4.3.6.1	Bolted	14	
4.3.6.2	Riveted	60	
4.3.6.3	Welded	54	
4.3.6.4	Bonded	7	
4.3.7	Loads and Stresses	35	
4.3.7.1	Tension	53	
4.3.7.2	Compression	185	
4.3.7.3	Bending	154	
4.3.7.4	Torsion	91	
4.3.7.5	Shear	112	
4.3.7.6	Concentrated	29	
4.3.7.7	Dynamic	69	
4.3.7.7.1	Repeated	12	
4.3.7.7.2	Transient	12	
4.3.7.8	Normal Pressures	51	
4.3.8	Weight Analysis	3	
5	MATERIALS	0	1294
5.1	Types	58	672
5.1.1	Aluminium	209	
5.1.2	Magnesium	32	
5.1.3	Steels	78	
5.1.4	Heat-Resisting Alloys	71	
5.1.5	Ceramics	32	
5.1.6	Plastics	47	
5.1.7	Woods	36	
5.1.8	Adhesives	11	
5.1.9	Protective Coatings	39	
5.1.10	Fabrics	23	
5.1.11	Sandwich and Laminates	48	
5.1.12	Ceramals	8	
5.2	Properties	92	532
5.2.1	Tensile	114	
5.2.2	Compressive	60	
5.2.3	Creep	45	
5.2.4	Stress-Rupture	43	
5.2.5	Fatigue	72	
5.2.6	Shear	6	
5.2.7	Flexural	6	
5.2.8	Corrosion Resistance	19	
5.2.9	Structure	50	
5.2.10	Effects of Nuclear Radiation	5	
5.2.11	Thermal	5	
5.2.12	Multi-Axial Stress	16	
5.2.13	Plasticity	19	
5.3	Operating Stresses and Conditions	35	90
5.3.1	Airframe	18	
5.3.2	Propulsion System	37	
6	METEOROLOGY	5	240
6.1	Atmosphere	25	
6.1.1	Standard Atmosphere	16	

(FIG. 1—Contd.)

Classification Heading		Reports under this Heading	Cumulative totals under this Heading
6.1.2	Gusts	16	
6.1.2.1	Structure	18	
6.1.2.2	Frequency	16	
6.1.2.3	Turbulence	54	
6.1.2.4	Alleviation	11	
6.1.3	Electricity	11	
6.2	Ice Formation	68	68
7	OPERATING PROBLEMS	6	593
7.1	Safety	144	145
7.1.1	Pilot Escape Techniques	1	
7.2	Navigation	26	26
7.3	Ice Prevention and Removal	62	173
7.3.1	Engine Induction Systems	19	
7.3.2	Propellers	24	
7.3.3	Wings and Tails	33	
7.3.4	Windshields	14	
7.3.5	Miscellaneous Accessories	13	
7.3.6	Propulsion Systems	8	
7.4	Noise	39	39
7.5	Heating and Ventilating	36	36
7.6	Lightning Hazards	11	11
7.7	Piloting Technique	65	65
7.8	Physiological	13	13
7.9	Fire Hazards	6	6
7.10	General	73	73
8	INSTRUMENTS	2	468
8.1	Flight	220	220
8.2	Laboratory	201	201
8.3	Meteorological	45	45
9	RESEARCH EQUIPMENT AND TECHNIQUES	7	956
9.1	Equipment	55	414
9.1.1	Wind Tunnels	130	
9.1.2	Free-Flight	67	
9.1.3	Towing Tanks and Impact Basins	21	
9.1.4	Propulsion Research Equipment	56	
9.1.5	Propeller	20	
9.1.6	Materials	33	
9.1.7	Structures	32	
9.2	Technique	55	535
9.2.1	Corrections	102	
9.2.2	Aerodynamics	194	
9.2.3	Hydrodynamics	24	
9.2.4	Loads and Construction	70	
9.2.5	Propulsion	39	
9.2.6	Operating Problems	11	
9.2.7	Mathematics	40	
10	NOMENCLATURE	15	15
11	BIBLIOGRAPHIES AND INDEXES	20	20
12	TECHNICAL SUMMARIES	18	18

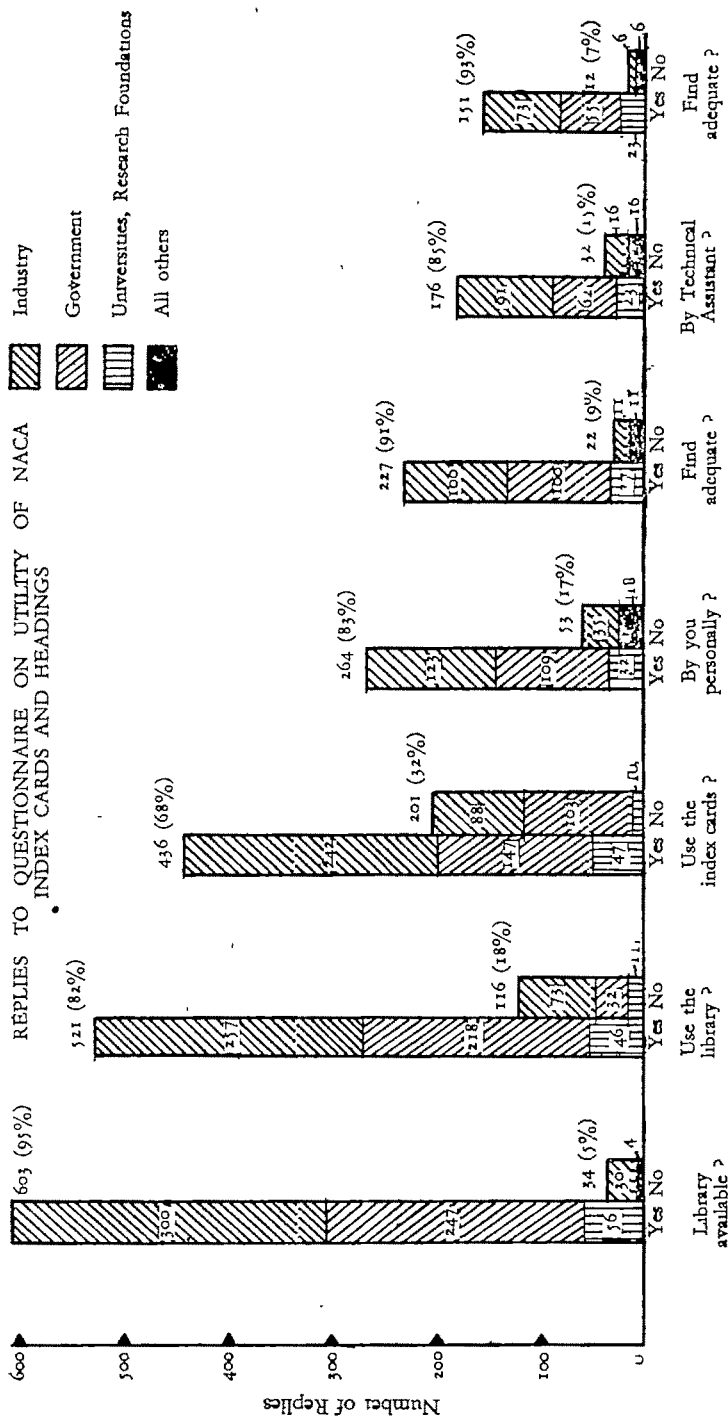


Figure 2A



Figure 2A (continued)

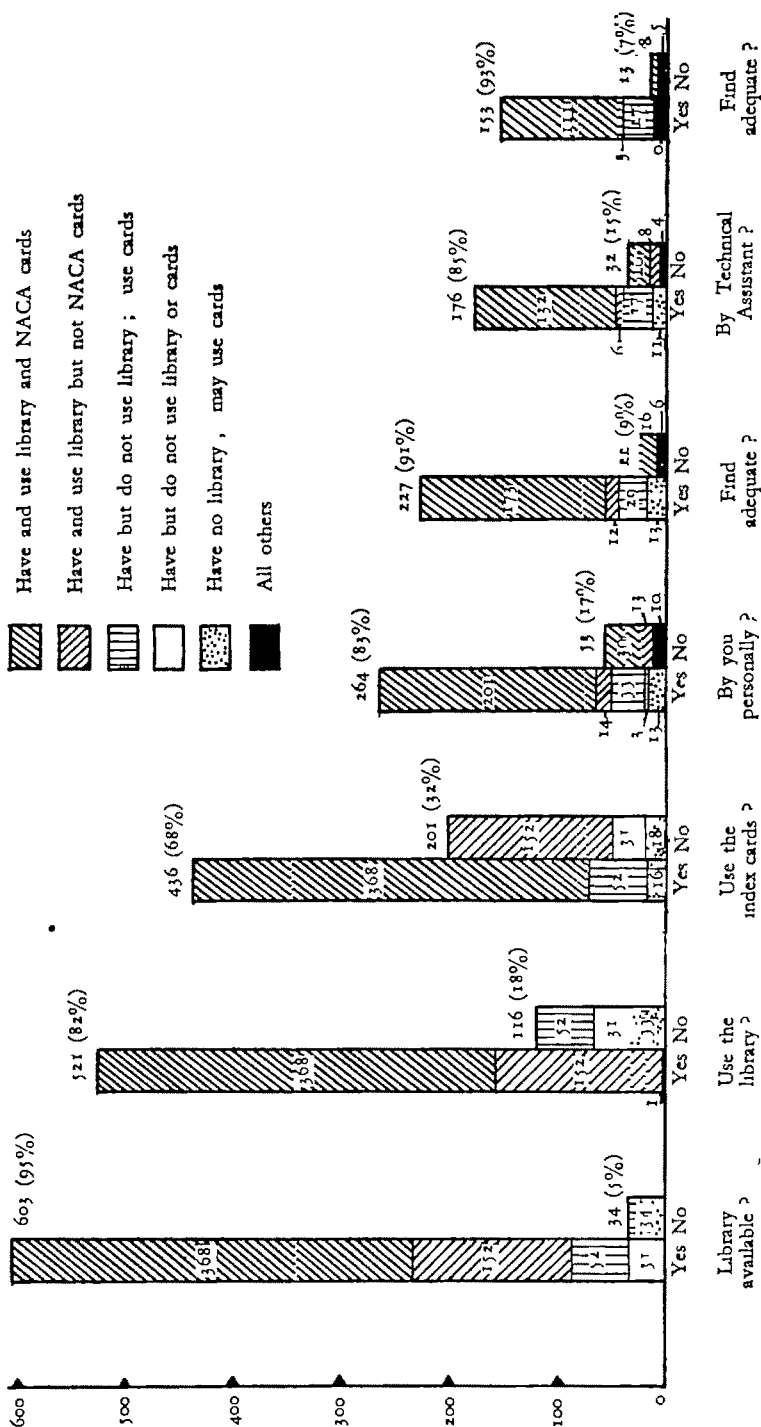


Figure 28

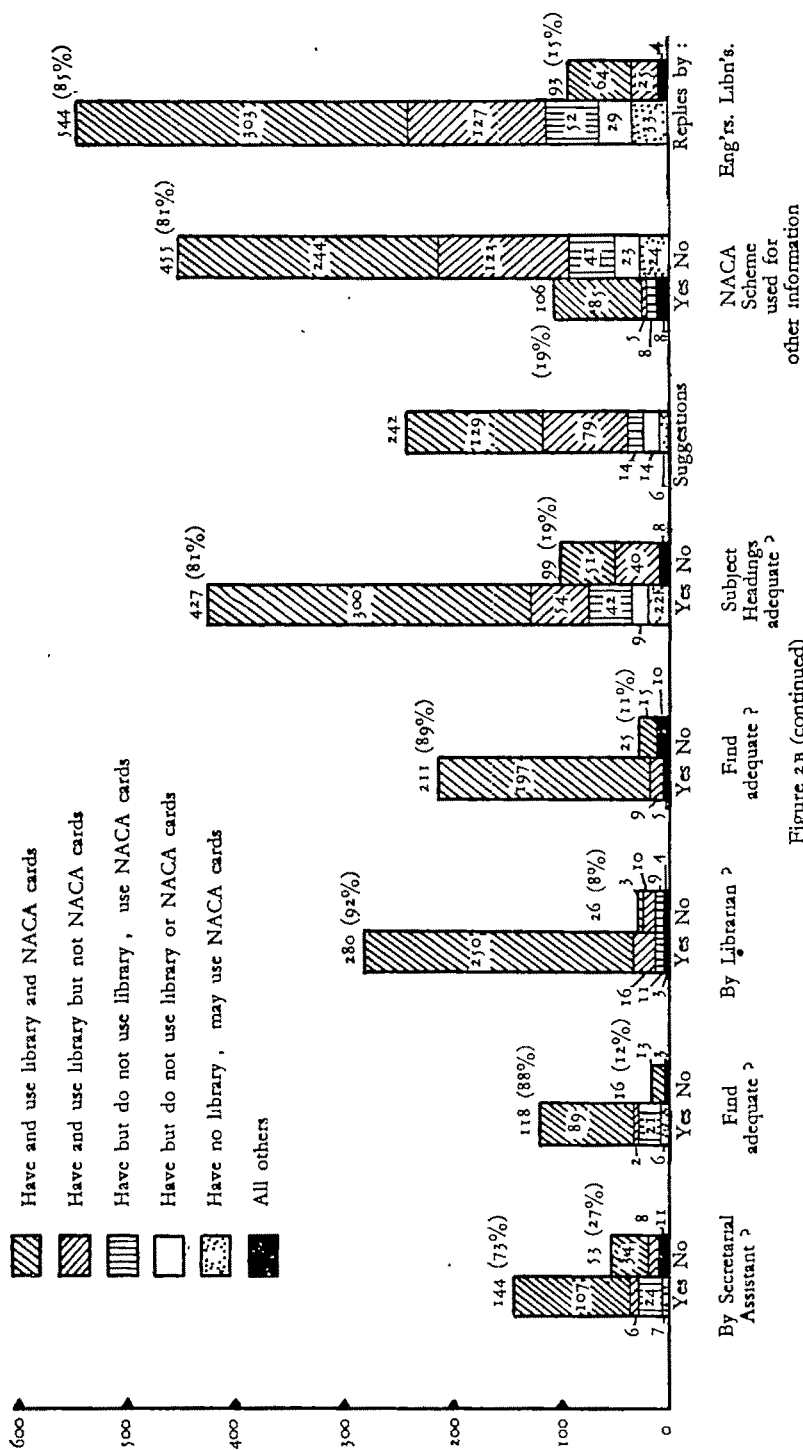


Figure 2B (continued)

National Advisory Committee for Aeronautics
Washington 25, D.C.

Budget Bureau No. 104-5301
Approval Expires June, 1953

January 27, 1953

1. Do you have a library available to assist you in your research ?
Yes No
2. If Yes, do you use the library to assist you in locating NACA publications ? Yes No
3. In locating NACA publications, is use made of the index cards found in the back of NACA reports ? Yes... ..No.
4. If NACA index cards are used, indicate by whom used and whether user finds cards adequate :

	Use		Find Adequate	
	Yes	No	Yes	No
By you personally	..	..	..	..
By technical assistant	...	...	...	...
By secretarial assistant	...	...	...	...
By librarian	..	..	..	..

5. Does the user feel that the index headings on the cards are adequate ?
Yes... ..No

Suggestions for improvements
.....
.....
.....

6. Is the NACA index scheme used to organize Non-NACA information ? Yes.. No .. .

Please indicate your field of interest :

General engineering	.....	Specialization(s).....
Design	.....	.....
Research	.....	.....
Teaching	.....	Other

Name and title

Fig. 3. Questionnaire circulated to recipients of NACA publications.

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REPORT of the Council for the year ended 31 December, 1952, presented at the Annual General Meeting on 13 May, 1953, held at the Incorporated Society of Auctioneers and Landed Property Agents, 34 Queen's Gate, London, S.W.7. The Chairman was Mr. G. Woledge.*

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Section A—Introduction

In spite of less encouraging conditions generally, the rate of development achieved in 1951 was maintained in most departments and increased in some others. The accounts for the year showed a surplus of £1,474, and for the first time in Aslib's twenty-eight years of existence it was possible to establish a reserve fund against future contingencies; the membership rose by a further 17 per cent to 1,434; enquiries dealt with by the Information Department increased by 117 per cent compared with the number in 1951, which itself showed an increase of 33 per cent over 1950; work carried out by the Document Reproduction Service was nearly treble that in 1951, and the service showed a surplus of £148, compared with a deficit of £391; in addition to direct correspondence with potential members an effort was made to publicize Aslib's activities by means of special branch conferences and a joint conference with the Federation of British Industries; an additional study course at a more advanced level than those previously held was instituted; a consultant service on all aspects of special library and information department activities was started and, after an experimental year, modified and placed on a permanent footing (see Section G of this report).

As a result of the Aslib Winter Meeting on Micro-opaques, mentioned elsewhere in this report, a joint Aslib/Library Association Committee on Documentary Reproduction was set up. Progress was reported by a small *ad hoc* committee established in the previous year to investigate delays

* The report, together with lists of officers and staff, and the Balance Sheet and Accounts for the year, was circulated to all members of Aslib before the meeting.

in the publication of patent specifications, indexes and abridgements. Thanks to the co-operation shown by the Patent Office, H.M.S.O. and some other interested organizations, arrears caused by wartime and post-war shortages were considerably reduced and steps taken towards ensuring adequate staffing arrangements at the Patent Office. In June, Aslib was privileged to take part in the 'Physics in Industry' exhibition held in Glasgow by the Institute of Physics, and in May the Director took part in the recording of a feature programme about Aslib for broadcasting in French-speaking Canada. A programme of work for the five years 1954-58 was drawn up and will form the basis of Aslib's application to the D.S.I.R. for revenue grant for that period.

During the year, Aslib lost by death no less than four past presidents—Sir Charles Sherrington, who was President 1932-34; Sir Richard Gregory, 1934-35; Sir Frederick Kenyon, 1944-45; and Sir Reginald Stradling, 1946-47. Dr. Luxmoore Newcombe, another staunch supporter of Aslib, also died.

Section B—Finance

In the Annual Report for 1951, reference was made to the possible need for some adjustment to the figure for grant-earning income in the accounts for that year, and grant of only £4,800 was claimed instead of the £5,000 that would normally have been earned by the subscription total of £5,337. When the terms of the adjustment were finally approved, grant-earning subscriptions for 1951 still exceeded £5,000, so that an additional £200 beyond the £4,800 claimed became due. Grant of £217, however, had been erroneously received in respect of 1950 and had to be refunded to the D.S.I.R. These two amounts, which virtually cancel each other out, are entered in the Appropriation Account.

In 1952 it was necessary to raise a minimum of £5,000 in grant-earning subscriptions to secure grant of a similar amount. It was also possible to secure a maximum of £6,000 by raising £6,000 in such subscriptions. As a result of the membership campaign, not only was this maximum reached; it was exceeded by £220. Non-grant-earning subscriptions, which now include those paid by overseas members and D.S.I.R.-supported Research Associations, amounted to £1,326.

The major increases in expenditure relate to staff salaries and general office expenses, particularly stationery and postal and telephone charges. Besides the normal increments due in January, a special increment was given in July because it was considered that Aslib's salary scales were below the average for the profession, and four members of the staff received a further increment, also in July, in return for particularly good service. In addition, a Consultant and three others were appointed to the staff, bringing the total to twenty-four. National Insurance costs, amounting to approximately £175, are included in the salaries figure. An increased membership and the sharp rise in the turnover of work mentioned elsewhere in this report led to an increase of £349 in postal and telephone charges. Travelling expenses, including foreign travel in connection with the International Federation for Documentation, rose

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by £99 and bills for £134, largely for converting the first-floor landing into a reception office, were incurred in respect of office repairs and decorations.

Increased expenditure on both salaries and office overheads is naturally reflected in all departmental accounts. In addition, an attempt has been made to relate the proportion of the total costs debited against each department more closely to the floor space occupied and the appropriate staff salaries. Partly for this reason and partly because of their expansion, the amount debited against the library and information department in respect of salaries and overheads has increased by £3,082 (or £2,222 allowing for special grant to put the Consultant Service into operation) over 1951; the amount for the document reproduction service, however, has been reduced by £161. A particularly welcome feature is the drop in the cost of printing the four periodicals—a saving of £625 on last year's costs of £3,300.

The net result of the year's work is a surplus of £1,474, virtually the same as in 1951. An allowance of £266 has been made on the Balance Sheet for depreciation of furniture and equipment, and it will be seen that the value of stocks of publications and of stationery show no substantial change, though both have again been marked down in value. The outstanding portion of the D.S.I.R. grant, which is payable in arrears, is a higher figure than in 1951, since the total grant earned is greater.

For the first time in Aslib's history, Council was able to authorize the investment of funds to start the building up of a reserve against future contingencies. As a first step, National Savings Certificates were bought to the value of £495. This is one sign among many that Aslib's financial position shows a further improvement over 1951, itself a very satisfactory year. It is confidently hoped that similar progress will be achieved in 1953, the last year of the present five-year period for D.S.I.R. grant. Subsequent progress will depend in no small measure on the assistance available during the next five years.

Section C—Membership

The drive for new members, begun in earnest in 1951, continued throughout the year and resulted in the enrolment of 293 new members, representing £1,900 additional subscription income. Not all of this sum was eligible for Government grant since the maximum grant-earning subscription income of £6,000 was exceeded. Of these 293 new members, 10 are directly attributable to a special meeting held in Glasgow under D.S.I.R. auspices in February, and 11 to a one-day conference held jointly with the Federation of British Industries in London in March. The result is encouraging for a year of adverse economic conditions.

On the other hand, 78 members, representing £372 in annual subscriptions, resigned or were suspended. The net result was that the membership stood at 1,434 on 31 December, 1952, compared with 1,219 a year earlier. The following table shows the distribution of members among the five main categories at the end of the year. It lists for comparison the number in each category at the end of 1951, the number of

new members admitted and existing members resigned during 1952, and the net figure and percentage increase for the year.

<i>Category</i>	1951	<i>Added in</i> 1952	<i>Resigned</i> <i>in</i> 1952	<i>Total</i> 31.12.52	<i>Net</i> <i>Increase</i>
Industrial and Commercial Concerns	263	121	17	357	40%
Non-profit-making Organizations	380	24	11	393	4%
Individual Members	220	77	30	257	21%
Overseas Members of all categories	248	65	18	295	19%
British Government Departments* ..	108	6	2	112	4%
TOTAL	1,219	293	78	1,434	17.6%

* These British Government Departments are included, since, while they are not members of Aslib in the strict sense of the term, they receive all privileges of membership under the conditions of Government grant.

The membership campaign is continuing.

Section D—Conferences and Meetings

A number of new developments in this field had their origin in 1952. In February, some 55 senior executives of Scottish companies attended a social meeting in Glasgow to hear talks by the Deputy Chairman of Council and the Director on industrial information services and Aslib's part in them. The meeting was held under the auspices of the Edinburgh office of the D.S.I.R. and, besides enabling Aslib to secure a clearer understanding of information problems in Scotland, resulted in 10 Scottish companies joining Aslib. In March, the first public conference to be held in recent years by Aslib jointly with another national organization—the Federation of British Industries—took place in London. Its purpose was to convey the importance of information services to industrial and commercial companies, to give practical illustrations by means of visits to the information departments of a number of companies in and near London, and to bring Aslib's work to the notice of a wider public. Eleven companies joined Aslib as a result of this conference. A series of 'at homes' for new members was started during the year, and a system of forums inaugurated to refresh the minds of existing members

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about the services and facilities available to them. Preliminary plans were also made for a conference on the improvement of bibliographical services in the humanities which it is hoped to hold early in 1954.

The Annual Conference was held at a country house known as The Hayes at Swanwick, in Derbyshire, and now given over entirely to conference parties. Some 270 members and guests gathered there from 19-22 September and papers were read on the significance of information in modern industrial society, on the information services of public libraries, the Festival of Britain and the Automobile Association, and on the results of the Royal Society's Scientific Information Conference, 1948. A full report of the conference appears in *Aslib Proceedings*, Vol. 4, No. 4.

As in previous years, the winter evening meetings in London proved extremely popular. Visits were arranged to the libraries of the B.B.C., the *Daily Mail* and the Department of Scientific and Industrial Research and to the American Library in London. The following papers were read :

'Patents as Sources of Information', by H. E. Mathys and E. M. Bennett (*Aslib Proceedings*, Vol. 4, No. 2).

'Micro-opaques', by H. R. Verry (*Aslib Proceedings*, Vol. 4, No. 3).

'Editorial Work for Librarians', by H. R. Lang.

'The Psychology of Classification', by J. E. L. Farradane.

'If I had my way—with Publishers', by A. B. Agard Evans (*Aslib Proceedings*, Vol. 5, No. 1).

Section E—Education

An innovation was a long weekend study course, held in February, for intermediate staff of special libraries and information departments. From the organizers' point-of-view, the course exceeded expectations ; 65 students took part, discussion was brisk and constructive and many valuable ideas were put forward for future courses. A deliberately restricted subject field—the routine dissemination of information and abstracting—was chosen to permit close study, and the success of the course resulted in the decision to include a similar course in each subsequent year's programme.

The study course for junior workers, which had been held yearly since the war, was recast on more elementary lines and took place in May. Only 30 students enrolled as against 57 in the previous year, possibly because it was made clear that this course was primarily intended for beginners, while people with a few years' practical experience would probably find greater interest in the intermediate course. The junior course is, however, of great value as an introduction to special library work and will continue.

The Education Committee was in close contact during the year with teaching establishments in various parts of the country at which courses particularly designed for special librarians were either in operation or contemplated.

Section F—Information Service and Library

Compared with activities in 1951, which was also a year of rapid expansion, the work of this department increased at all points, in one respect by as much as 192 per cent and in another by 117 per cent. As in last year's report, it is proposed to tabulate statistics to illustrate the work of the department.

The number of enquiries received, other than those in connection with the documentary reproduction section which are recorded separately, rose to 7,662, compared with 3,521 in 1951, an increase of 117 per cent. Of this number, 3,677 represent requests for assistance in borrowing material, 642 relate to the Translations Index, and the remaining 3,343 cover the various types of information shown in the following table. An analysis of these enquiries received during a given period shows the following distribution over the main categories :

<i>Type of Enquiry</i>	<i>By phone</i>	<i>By letter</i>
Checking inadequate references	4%	3%
Complete bibliographical details	18%	18%
References on given subjects	11%	33%
Sources of specialized information ..	5%	8%
Names of manufacturers of various items	5%	5%
Statistics	5%	—
Verification of facts	9%	3%
Addresses of various organizations ..	13%	8%
Information about specific organizations	1%	—
Library routines, etc.	7%	12%
Training and salaries of librarians ..	1%	1%
Location of specific documents	14%	6%
Information about photocopying services	5%	1%
Information about translations (other than Aslib index)	5%	2%

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As in 1951, the most frequent enquirers were industrial and commercial companies, with Government Departments next in order. The following table, based on the same selection of enquiries, shows the percentage of enquiries received from each of the various categories of enquirers :

<i>Source of Enquiries</i>	<i>'Phone</i> 1951	<i>'Phone</i> 1952	<i>Post</i> 1951	<i>Post</i> 1952
Societies and Institutions..	13%	10%	6%	8%
Universities and Colleges	3%	2%	6%	8%
Government Departments	25%	17%	16%	11%
Research Associations ..		5%		7%
Public Libraries	5%	5%	9%	16%
Industrial and Commercial firms	47%	50%	40%	42%
Individual Members ..	4%	9%	8%	6%
Non-Members	3%	2%	15%	2%

Approximately 60 per cent of these enquiries were answered from Aslib's own resources. A further 9 per cent were answered as a result of the staff having consulted material held by other libraries such as the Patent Office Library, and another 17 per cent needed only a local telephone call. Only 12 per cent of the total number were such as to involve referring the enquirer to a third party and in only 2 per cent had failure to be recorded.

It is also encouraging to record that the Documentary Reproduction Service, which had been a costly activity for many years, at last showed the beneficial results of the reorganization and new scales of charges introduced in 1950. Its turnover of work not only nearly trebled itself—3,038 orders were handled compared with 1,038 in 1951—but the deficits of £635 shown in 1950 and of £391 in 1951 were replaced by a surplus of £148.

The index of unpublished translations of foreign scientific papers now contains approximately 9,000 entries, of which 2,143 were notified as 'completed' and 403 as 'in progress' in 1952. Enquiries for translations numbered 642 compared with 225 in 1951, and the desired translations were available in 30 cases as against 9 in 1951. Statistics, which can be seen at Aslib but are too detailed to reproduce here, show that by far the greatest number of enquirers were interested in articles approx-

imately a year old, though articles up to 17 years old were also sought by many people, and that translations of German and Russian originals were easily the most sought after.

In order to raise the standard of the panel still higher and to ensure a reasonable amount of work for those enrolled, the panel of specialist translators was reviewed and the number of translators registered was reduced from 138 to 115. At the same time it was decided to waive all registration fees and commission in the case of members of Aslib. Suitable translators were recommended in 130 cases compared with 90 in 1951.

A systematic review of the requirements of the Aslib library led to a special allocation of funds to fill the more important gaps in its holdings. The following table indicates the growth of the library's activities during the year.

<i>Library Statistics</i>	1951	1952
Loans from the library	1,236	1,491
Books added	218	272
Pamphlets added	149	248
Miscellaneous items indexed	No record	688
Visitors to the library	168	221

A list of the library's periodical holdings was circulated to all members in December.

Section G—Consultant Service

One most important new development was the establishment, with the aid of a special grant from the D.S.I.R., of a consultant service to give authoritative advice on the establishment and efficient conduct of special libraries and information departments. A consultant was appointed in January and the introduction of the service aroused widespread interest. It soon became apparent, however, that neither members nor non-members were yet ready to pay for the service in sufficient numbers to ensure that it would become self-supporting within the two years laid down in the terms of the special grant. It was accordingly decided to reorganize the service in 1953, spreading the duties over the entire senior staff instead of employing one consultant only, at the same time maintaining the full service. To the first experimental year can be attributed some 6 new member firms, much favourable publicity in the general and technical press, three commissions of sufficient importance to justify a fee and some 20 or 30 consultations on relatively minor

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matters ; much valuable information was also collected about methods used by member organizations. The Council is satisfied that the provision of authoritative advice in this field is a necessary and proper activity of Aslib, and that as Aslib's work of encouraging the establishment of new special libraries and information departments bears fruit the demand for such advice may be expected to grow.

Section H—International Relations

The new International Relations Committee, which had held its first meeting in October, 1951, faced a year of strenuous but, for the most part, unspectacular work. Following the dissolution of the British National Committee on Documentation in 1950, and, in consequence, a year in which Great Britain was not represented on the Council of the International Federation for Documentation (F.I.D.), Aslib became in 1952 the official British member of the Federation. With the consciousness that international activities inevitably run the risk of being valueless if they are not conducted realistically, Aslib consistently urged upon the Federation a programme on severely practical lines.

It is a matter for satisfaction that the report of the F.I.D.'s Re-organization Committee—set up largely at British insistence at the Rome Conference in 1951—was substantially the work of Dr. Alexander King, Aslib's representative on the F.I.D. Council throughout 1952, and that its adoption has been generally welcomed as making the F.I.D. a potential instrument for really valuable international co-operation of a practical nature. Since this report was approved at the Copenhagen conference of F.I.D. in 1952—which Dr. Alexander King and Mr. F. C. Francis attended on behalf of Aslib—the International Relations Committee has played its part in drawing up the Statutes and Rules of Procedure for the reorganized Federation, a necessary preliminary to smooth working.

Foreign visitors to Aslib during the year came from, among other countries, Argentina, Australia, Chile, France, Germany, India, Japan, the Netherlands, Peru, Spain, Sweden and U.S.A. With the latter country, the first steps were taken in an endeavour to establish a regular and systematic exchange of special librarians and information officers. Though currency restrictions have proved a major difficulty, it is still hoped to establish such a scheme.

Section I—Publications

Definite progress can now be reported in several of the major publishing projects decided upon in 1951. By November, preparatory routine work on the new *Directory of Specialized Sources of Information* had advanced sufficiently for a part-time editorial assistant to be appointed to collect and collate the material and eventually to see the *Directory* through the press. About one-half of the chapters of the *Handbook for Special Librarians and Information Officers* had been completed by the end of the year and a start made on the remainder. Most of the entries from the *Aslib Book-List, 1935-1951*, had been collated and sifted by subject specialists prior to

necessary bibliographical checks and subsequent publication—it is hoped in 1953—as *British Scientific and Technical Books*. The new edition of the *Select List of Standard British Scientific and Technical Books* came off the press in October but publication of the first annual volume of the *Index to Theses Accepted for Higher Degrees in the Universities of Great Britain and Ireland* was unfortunately delayed until 1953. An addition to the Aslib Manual Series, *Periodicals and Serials*, by Mr. David Grenfell, was approved for publication in 1953.

Though the standard of material published in the *Journal of Documentation* and *Aslib Proceedings* remained high and publication schedules were adhered to, fewer copies of Aslib periodicals were sold than had been hoped for. The issue of free copies of the periodicals to members naturally rose with the expanding membership, but while the *Journal of Documentation* increased its sales to non-members by about 8 per cent, the *Aslib Book-List* and *Aslib Proceedings* showed decreases of just over 10 per cent. The principal reason for this decline in sales was undoubtedly the decision to raise subscription rates which had had to be taken half way through 1951, though an important factor in the case of the *Aslib Book-List* was also the reduction in the British Council's orders for sales overseas—itself no doubt a result of the constiction of the Council's budget. While income from sales of periodicals dropped by £163, however, the cost of printing them fell by £625. Income from the sale of advertisement space was about the same as in 1951.

Section J—Branches

In spite of difficulties suffered by the Scottish Branch—which, besides its transport problems, had to face the greater part of the year without a Branch Secretary—Branch activities exerted a local influence probably greater than in any year since the first branch was formed in the North in 1947. In each case, branch membership increased—to 167 in the North, 102 in the Midlands (where the Branch was formed only in the middle of 1951) and 55 in Scotland. An investigation was made late in the year into the possibility of organizing a South-Western Branch, to include the counties of south-west England and South Wales, but it appeared that special library and information services were not yet sufficiently developed in the area to ensure success. The position will, however, be reviewed from time to time.

In accordance with its now customary practice, the Northern Branch concentrated on making known over a wide area the work of Aslib and the place of libraries in the local community. Two major conferences were held for this purpose, one at Sheffield in March and the other at Hull in October. Visits to libraries and works, always a popular concomitant of Northern Branch conferences, were included in each case. The Midlands Branch meetings gave prominence to users' needs, with papers entitled 'What I expect of my information service' and 'The sales metallurgist seeks information', but there were also talks on the ways in which information services operate and on the training of information officers whilst, in May, a party of Branch members paid a visit to the

THE WORK OF ASLIB

Telecommunications Research Establishment at Great Malvern. For the reasons already mentioned, the Scottish Branch was unable to hold its customary annual conference in 1952 but, towards the end of the year, Mrs. M. Spence, who had been obliged to give up the Branch Secretaryship in 1951, again became free to serve in this capacity and plans were laid for a conference to be held in Glasgow in February, 1953. With the Branch membership almost doubled since 1950, a useful programme of activities in Scotland should now prove possible.

Section K—Groups

Progress varied greatly from one group to another but two new groups, for fuel and power and for engineering, were added to those for textiles, economics, aeronautics and food and agriculture, bringing the total number up to six. Preliminary steps were also taken late in the year towards ascertaining the demand for a metallurgy group and a chemicals group.

As experience in the previous year had foreshadowed, each group began to develop along its own particular lines. The Aeronautical Group, some 100 strong, completed working party reports on abstracts, aeronautical sections of the U.D.C., and some proposals for cataloguing aerodynamic data issued by the Nationaal Luchtvaartlaboratorium, Amsterdam, established contacts with N.A.T.O., the Nationaal Luchtvaartlaboratorium already mentioned, the Aeronautics Engineering Group of the S.L.A. and other bodies, produced the first three issues of an informative newsletter, held a week-end residential conference at Cranfield and created a card index of periodical and report holdings within the group. In response to a suggestion from the group, the Royal Aircraft Establishment, Farnborough, agreed to issue catalogue cards with its technical reports. The Fuel and Power Group was largely instrumental in securing the restoration of the monthly index, omitted on economy grounds, to *Fuel Abstracts*. For its first co-operative task, this group began to collect material for a skeleton guide to the country's library resources in respect of fuel and power. A union list of periodical holdings was compiled by the Economics Group and the Textiles Group, and a similar list was begun by the newly-formed and very active Engineering Group. In addition, the Textiles Group, which unfortunately had little success with its co-operative translations scheme, started an investigation into classification of information in the textiles field, and the Economics Group was at the end of the year investigating the possibility of holding a short study course in London on methods of dealing with economic intelligence. The Food and Agriculture Group, in addition to exchanging lists of periodicals taken currently and starting work on a union list of periodical holdings, was fortunate in persuading the Ministry of Food Library to act as a central depository for Commonwealth and foreign food laws and regulations.

Assisting the special groups to develop on lines most useful to their members will be a major task for the next few years. At the end of 1952

it was possible to make a member of the staff responsible for co-ordinating group activities, keeping records of meetings and assisting the smooth development of co-operative projects.

Section L—Staff

The Council is glad of this opportunity to express its appreciation of the loyal and enthusiastic work of the Director and the staff throughout the year. Aslib's improved financial position made it possible to award a special salary increment to the staff in July in recognition that Aslib's salary scales were somewhat lower than those in other comparable organizations; an increment was also given to the Director and four members of the staff who had given exceptionally good service during the previous year. The superannuation scheme for senior staff, foreshadowed in the Annual Report for 1951, came into operation on 1 January, 1952. The staff numbered 24 at the end of the year.

For and on behalf of Council,

G. WOLEDGE,

Chairman.

BRITISH UNION CATALOGUE OF PERIODICALS

SEVENTH ANNUAL REPORT OF THE COUNCIL FOR THE YEAR ENDING 31ST MARCH, 1953

The British Union Catalogue of Periodicals is intended to furnish a guide to the location and availability of the periodicals of the world held in the principal libraries of the United Kingdom. Over 130,000 periodicals so held have been recorded.

The main work of the past year has been devoted to the addition, to the entries for particular periodicals, of the details relating to the holdings of the co-operating libraries.

The usefulness of BUCOP as a guide to the availability of this immense store of material for research and information depends mainly upon two factors : (i) the readiness of librarians to undertake the task, often very considerable, of providing adequate particulars of the periodicals held in their libraries ; and (ii) the extent to which these particulars can be incorporated in BUCOP in the time and with the facilities available.

So far as the first of these factors is concerned, we have been fortunate in our cordial relations with libraries of all kinds. The response has been limited only by such special local difficulties as the persistence of war-time disorganization or staff shortage.

The second factor has given us much concern. The task of incorporating the innumerable details of holdings in a work of this magnitude is exacting and time-consuming to an extent not originally foreseen ; and it became apparent that this vital work could not be carried to a stage suitable for publication by the time the grant made by the Rockefeller Foundation ended on 31st March, 1953.

A request was made to the Rockefeller Foundation for assistance to enable the work to be continued ; and in January, 1953, we were much gratified to learn that the Foundation had most generously made a further grant to Aslib for this purpose. In this connection, we must put on record our very great appreciation of the kindly understanding with which our case has been received by the Rockefeller Foundation ; and of the most helpful interest of the Council of Aslib in presenting the appeal to the Foundation.

The particulars of the holdings of many libraries (some with very large collections, e.g., the Birmingham and Manchester Public Libraries, Edinburgh University, and University College, London), have been included during the year ; and it is now anticipated that the main work of compilation will be completed in about twelve months.

Arrangements for the publication of BUCOP have been kept under review, and we expect that our plans for this important event will have advanced sufficiently for public announcement during the coming year.

In the meantime, an increasing number of enquiries for information regarding the location of periodicals are being received from libraries and

institutions, as well as from individual students. This demand, which so far has grown without any stimulus from publicity, can be regarded as an indication of a widely felt need, and affords us much encouragement in our endeavours to make BUCOP generally available as speedily as may be possible.

Our most grateful thanks are due to the Rockefeller Foundation for its generously renewed financial support ; and to the Trustees of the British Museum for their provision of the accommodation and assistance necessary for our work.

We must also record our appreciation of the manner in which the members of the staff of BUCOP have continued to give us whole-hearted and expert service.

BUCOP, c/o The British Museum, London, W.C.1.

BUCOP,
c/o The British Museum,
London, W.C.1.

BRITISH UNION CATALOGUE OF PERIODICALS
INCOME AND EXPENDITURE FOR THE YEAR ENDED 31ST
MARCH, 1953

Year to 31/3/52			£	s.	d.	£	s.	d.
£	2,000	GRANT FROM ROCKEFELLER FOUNDATION ..	1,750	0	0			
—	—	Interest on Deposit	4	16	1			
						1,754	16	1
		LESS EXPENDITURE						
25		Administrative Expenses	25	0	0			
1,755		Salaries	1,869	3	11			
19		Printing and Stationery						
5		Postages	5	0	0			
24		Travelling Expenses	22	1	3			
3		Audit and Accountancy	3	3	0			
—		Sundry Expenses	1	0	4			
—	1,831					1,925	8	6
169		DEFICIT FOR THE YEAR ENDED 31ST MARCH,						
(Surplus)		1953				170	12	5
		ACCUMULATED SURPLUS brought forward at						
364		1st April, 1952	532	14	0			
(Surplus)		Less DEFICIT FOR THE YEAR						
169		ended 31st March, 1953 ..	170	12	5			
		Mr. Basterman's expenses in New						
		York in 1945 (\$800 ad-						
		vanced by Rockefeller						
		Foundation)	198	4	1			
—	533		368	16	6			
		Represented by :				163	17	6
59		Cash at Bank on Current Account ..	206	0	9			
500		Post Office Savings Bank Account ..	5	16	1			
37		Cash in Hand	17	4	8			
596			229	1	6			
63		Less Sundry Creditors	65	4	0			
533						163	17	6

We have examined the above Income and Expenditure Account with the Books and Records of ASLIB and certify that it is correct and in accordance therewith.

(Signed) WEST & DRAKE,
Chartered Accountants.

Sardinia House,
52 Lincoln's Inn Fields,
London, W.C.2.
8th May, 1953.

TWENTY-EIGHTH ANNUAL CONFERENCE, 1953

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ASLIB PROCEEDINGS

VOLUME 5

1953

Aslib

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ASLIB PROCEEDINGS

Volume 5

November 1953

Number 4

INTRODUCTION

THE 28th annual conference of Aslib, held at Nottingham University from 11th to 14th September, 1953, proved to be the largest that Aslib has so far organized. A list of those present is printed on pp. 254-260. Yet again Aslib was glad to be able to welcome a number of overseas guests and members, including Dr. and Mrs. Lancour and their small daughter from the U.S.A., Drs. and Mrs. van Dijk and Miss Rom from the Netherlands, Mr. M. S. Dandekar and Mr. J. V. Karandikar from India, Miss D. M. Leach from Canada, and Mrs. T. Collin from Norway. Mr. Walter A. Southern, a Fulbright scholar from the U.S.A. affiliated to Aslib during his year's study in the United Kingdom, represented the Special Libraries Association, and Mr. J. E. Holmstrom attended as an observer on behalf of Unesco.

Proceedings opened on the Friday evening when members gathered in the Great Hall of the University to hear the Presidential Address. Mr. Agard Evans, Chairman of Council, read the following message from Dr. Luther H. Evans, Director-General of Unesco :

'Please convey to the Aslib Conference my great regret that I cannot accept your kind invitation to attend its 28th Annual Meeting at Nottingham, and my warmest good wishes for a successful meeting.

'Aslib has been among Unesco's best friends and supporters, and I am sure that there will be many opportunities of continuing and extending our active co-operation in the future. My colleagues and I will welcome every chance of calling on Aslib to help in the fulfilment of Unesco's programme.

'I am particularly interested to see from the agenda that special library training is one of the main conference subjects and that it is to be discussed on an international basis. The need to improve facilities for the education of librarians throughout the world is one of our most urgent problems, and I will look forward to studying the conference reports with a view to the help which I am sure they will give in the development of Unesco's programme.

'May I take this opportunity of paying a tribute to your late Chairman, Mr. Charles Le Maistre, whose death has deprived Unesco of one of its most loyal and active friends and all of us of one of the world's most enthusiastic and active leaders of international co-operation in special library and documentation work. It is significant of Aslib's place in international affairs that Mr. Le Maistre, whose special genius was in the fields of international co-operation, should find in Aslib the main centre from which his indomitable enthusiasm and energy could radiate.'

Mr. G. Ellis Flack, Librarian of the University of Nottingham, then

welcomed the guests on behalf of the Vice-Chancellor, who was unable to be present. Mr. Flack reminded his audience that it had been planned to hold the 1939 conference at Nottingham, but that the gathering had had to be cancelled at the last moment on account of the outbreak of war. He drew attention to the extraordinary growth of the University in the intervening period, when the number of students had risen from 236 to 2,036, and the teaching staff had similarly increased in numbers from 84 to 584.

The Chair was taken by Mr. Agard Evans, Chairman of the Aslib Council, who introduced the President, Professor Barbara Wootton, Nuffield Research Fellow (Bedford College), sometime Professor of Social Studies, University of London. 'Some problems of communication' was the theme of the Presidential Address, which is printed in full on pp. 261-270. In accordance with custom there was no discussion of the paper, but after prolonged applause the meeting adjourned to the Lower Hall, where an exhibition of books and library equipment was on view. Notes on the exhibits will be found on pp. 354-357.

Saturday morning began with an important session on special library training as it is to-day. In the absence of Miss Barbara Kyle, who had fallen sick at the last moment, the Chair was taken by Mr. C. W. Cleverdon, Deputy Chairman of the Conference and Meetings Committee, who introduced the speakers. Dr. Harold Lancour, Associate Director of the University of Illinois Library School, spoke of the training of special librarians in the U.S.A.; Drs. Carl van Dijk described the special library situation in the Netherlands, and Mrs. Mackiewicz, Information Officer of Aslib, set out the position of training for special librarians in Great Britain. All three papers are printed in full.

Saturday afternoon was left free for visits and expeditions. Parties of members went to the beautiful Elizabethan mansion of Hardwick Hall, to Newstead Abbey, which had been the home of Lord Byron, and to the Nottingham University library, where the Librarian, Mr. Flack, had arranged an exhibition of some of the University's treasures.

Work was resumed after dinner when facilities had been provided for a number of discussion groups on many different topics. Summary reports of these meetings will be found on pp. 293-306.

On Sunday morning concurrent sessions had been arranged on 'Administration problems of a special library' and on 'Methods of photographic reproduction'. Both were well attended. Mr. R. O. MacKenna, Librarian of the University, Glasgow, took the Chair for the session on administration problems and shortened versions of the three papers, by Mr. L. T. Oldaker, Mr. N. L. R. Sheret and Mr. F. A. Tubbs, will be found on pp. 307-312. The session on photographic reproduction was held in the Lower Hall, surrounded by exhibits of many of the machines in question. Mr. H. R. Verry, of the O. & M. Division of H.M. Treasury, took the Chair and introduced the subject. Representatives of six firms then spoke in turn, each briefly describing the essential points of the particular apparatus which he was demonstrating. Notes on these machines will be found in the section covering the exhibition.

INTRODUCTION

On Sunday afternoon four concurrent symposia were held. Mr. J. L. Nolan, Director of Library Services at the American Library in London, took the Chair for a general group session on American information. Shortened versions of the two papers read at this session, by Mr. R. L. Collison and by Mr. W. A. Southern, are to be found on pp. 316-322. The Aeronautical Group of Aslib, under the Chairmanship of Mr. C. W. Cleverdon, discussed the handling of report material; all four papers are printed in full. The Engineering Group, with Mr. F. B. Roberts as Chairman, considered various problems coming under the heading of 'Snags I have struck'. Papers by Mr. P. E. Colinese and Mr. J. G. Hall are printed in full, the remaining four contributions, though preprinted in full, have been briefly summarized here. Members of the Fuel and Power Group and others interested in its work held a meeting with Mr. F. Hickman as convenor. As an aid to the discussion, a 'directory' of the main fuel and power libraries had been compiled and preprinted, but this, for lack of space, cannot be reproduced here. (These preprints are still available from Aslib at 2s. each.) Mr. Hickman's report will be found on p. 353.

After all this strenuous work the proceedings of the conference ended on a lighter note. 'Flash point—or know your expert', a light-hearted inquiry into a failure of information, was acted in the Great Hall by members of Aslib. The script was written by Mr. A. W. McClellan and the play was produced by Mr. Frank Hickman.

The fall of the curtain marked the end of the conference, but it rose again to permit the customary, though nevertheless sincere, votes of thanks. Mr. Agard Evans, as Chairman of the Aslib Council, proposed thanks to the Conference and Meetings Committee who, under the Chairmanship of Mrs. J. Lancaster-Jones, had been responsible for the conference programme, to the Vice-Chancellor and Senate of the University of Nottingham for permission to hold the conference at Nottingham, to Mr. G. Ellis Flack, Librarian of the University of Nottingham, for valuable help in making local arrangements, to the Director and staff of Aslib who had carried the burden of the detailed organization, and to the staff of the three hostels, Florence Boot Hall, Florence Nightingale Hall and Wortley Hall, whose services and catering had contributed so much to the comfort of all those attending the conference. The votes were carried by acclamation and the meeting dispersed for a final look round the Exhibition or tea and conversation at the various Halls.

Most members departed early on Monday morning, but for those who could afford the time several extra expeditions had been arranged. These included a visit to the Sutton Bonnington School of Agriculture Farm, a trip to Ericsson Telephones, Ltd., a tour of Nottingham Central Library, and an opportunity to see the medical library and the chemical-biochemistry library at Boots Pure Drug Co., Ltd.

It only remains to add that throughout the week-end the weather was kind, thus minimizing the inconvenience, inescapable with a large conference, of the scattering of members between several hostels.

E. M. R. DITMAS, *Editor*.

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SOME PROBLEMS OF COMMUNICATION

BY BARBARA WOOTTON

Nuffield Research Fellow (Bedford College), sometime Professor of Social Studies, University of London

I SHOULD like to open these proceedings by expressing my appreciation of the honour conferred upon me by Aslib in the invitation to become their President. The Presidents of Aslib have been a very distinguished company, in which I am indeed proud to find myself. My remarks this evening will be concerned with some of the difficulties which obstruct communication between one human being and another. May I begin by expressing the hope that, whatever may be the fate of the rest of this address, these sentiments at least will be successfully communicated from speaker to audience ?

At a later stage tonight, I wish particularly to direct your attention to problems of communication associated with the social sciences. These are, however, only a special—though a specially acute—case of difficulties which beset the whole process of communication between human beings in all its many forms. They must, therefore, be set against a sketch of this wider background.

We may begin by reminding ourselves that the art of communication has been evolved, as it were, by accident. Animals make noises primarily in order to please themselves, not to instruct, to entertain or even to annoy their fellows. To quote Dr. Tinbergen : ‘All evidence so far known points to the conclusion that signal movements have originally been movements without signal function ; they were, in a way, by-products of nervous organization.’ Many of you will recall the illustration of the same point given by Dr. Konrad Lorenz in his delightful work *King Solomon's Ring*, where he describes his own naïve surprise at finding that the jackdaws in central Russia apparently ‘talked’ exactly the same language as his own birds at Altenberg. However, ‘the superficial similarity between these animal utterances and human languages,’ writes Dr. Lorenz, ‘diminishes as it becomes gradually clear that the animal, in all these sounds and movements expressing its emotions, has in no way the conscious intention of influencing a fellow member of its species. This is proved by the fact that even geese or jackdaws reared and kept singly make all these signals as soon as the corresponding mood overtakes them.’

No very elaborate observation of the habits of human beings is needed to suggest that human communication has still not progressed very far beyond this stage. Conversation often appears better designed to relieve the speaker than to profit the hearer ; and much the same is true, though no doubt in less degree, of the written word also. Indeed, it has been said that conversation can be divided into two classes, of which one resembles the game of tennis, the other golf. In tennis one returns one's

opponent's ball ; in golf each player continues to hit his own. If conversational golf appears to be the more popular game, it is perhaps some consolation to reflect that the art of communication is not a natural gift, but something that has been painfully acquired : and that, at least on an evolutionary time scale, we have as yet had very little time in which to master it. Successful communication naturally depends always upon the harmonious working of two instruments—one at the sending and one at the receiving end. It is futile to transmit material on a wavelength to which the receivers cannot be tuned, or which is liable to be grossly distorted : the fact that certain transmissions may be enjoyable to those who make them is no answer to that. These are indeed very elementary lessons. But at no level—whether that of politics, of education or of ordinary domestic intercourse—have they yet been effectively learned ; and much confusion and misery results from their neglect. Happily, however, the subject is now engaging the attention of many brands of scientist, and big advances in mutual understanding may be anticipated from their activities. Indeed, we must expect that, to later generations, many even of our most sophisticated communications will seem almost as primitive as (and considerably less efficient than) the cawing of Dr. Lorenz' jackdaws.

In the past two centuries the inherent difficulties of communication have been both aggravated and diminished by the immense growth of scientific knowledge. To take the credit side of the account first, the need to make known the results of scientific enquiry calls for instruments to be fashioned appropriate for that purpose. Scientific communication must be exact and lucid : it must convey the required information unmistakably, without the aid of passion and undistorted by the emotions of the author. Clarity and precision are its merits, and in respect of these it may claim an æsthetic, if austere, virtue of its own. These features are, however, far removed from the artistic qualities inherent in the whole construction of a work of literature. Scientific communication has little place for the witty epigrams, the apt quotations, or the elegant similes which adorn the books on history or art, and none at all for the selective use of emotionally coloured terms which is the propagandist's normal stock-in-trade. In fact, stripped of these accessories, scientific communication has less and less use for books of any kind. 'I cannot see what people want with books at all,' a brilliant mathematician of my acquaintance remarked the other day : incidentally, he has recently married a librarian. Certainly the typical form of scientific communication is now the paper, or the abstract of the paper, or even perhaps the abstract of the abstract of the paper condensed by the information officer. Lucidity, rather than readability, is the primary aim. Indeed, in a sense, all scientific writing ranks as reference material : you get out of it the particular information that you want, and neglect the rest. Nothing is lost by this picking and choosing from works which are not conceived as æsthetic wholes. But few would say the same of, say, Trevelyan's *Social History of England*.

In one corner of the whole field of human communication the distinc-

WOOTTON : PROBLEMS OF COMMUNICATION

tion has thus been clearly drawn between informative and imaginative writing, or between the communication of fact and the communication of feeling. That much we owe to the natural sciences which have developed their own exact, often mathematical, emotion-free instruments of communication. A paper on, say, *The ascorbic acid content of potato tubers* or *The genesis of the cat's responses to the rat* is demonstrably a different article from a play of Shakespeare. That distinction is indeed obvious. But as I hope to show later, failure thus to discriminate between alternative forms of communication, and to use only those which are appropriate to the purpose in hand, is a real obstacle to the advance of knowledge in other fields.

Turning now to the other side of the account, we find that the growth of scientific knowledge has both directly and indirectly added to the strains which our imperfect instruments of communication have to carry. A familiar, but rather shattering, example of the direct effect is to be found in the growing disproportion between the volume of knowledge available, and the capacity of any individual mind to master this. Every investigator must from time to time have wondered whether the price of keeping abreast of other people's work must not be the abandonment of any hope of making a contribution of his own. Mostly we tackle this problem by the ever-narrowing specialization which knows more and more about less and less. But this is not, in the last analysis, an adequate solution. Few of the really important problems that face the world to-day are such as can be resolved by highly specialized methods. Though the mountain of scientific knowledge is built up grain upon grain, the use of that knowledge to man's best advantage constantly involves the grasp of great masses of its substances. That is the dilemma.

In present company it is hardly necessary to point the moral, or to stress the value of the work which information officers can do in pre-digesting the elaborate intellectual meals which the modern scientist is required to consume. The information officer is himself a stage in the sequence of communication, a transmitter that needs to be adjusted to the instrument at the receiving end. That adjustment can often, I fear, only be successfully achieved by a study of the foibles and foolishnesses of the potential consumers of information. Tiresome though these are, I would beg you to study the blind spots, the misuses of your inherently admirable systems, the unreasonable limitations to the receptivity of your clients; and, in your charity to employ, not so much the systems that are inherently the most logical, as those which are best accommodated to the level of their users.

Indirectly, also, the progress of science has aggravated difficulties of communication because it is scientific discovery which has given us the instruments of mass communication—the popular press and broadcasts in sound and vision. Mass communication means simultaneous transmission to vast numbers of receiving sets, the quality of which varies enormously. The problem of the broadcaster who must speak to an audience of every level of intelligence, education and experience is insoluble in ideal terms. As with many other things, however, none of

which can be done perfectly, degrees of better or worse can be distinguished, once the problem has been recognized. In this context I would refer you to Mr. Belson's account in the *B.B.C. Quarterly* of an experiment in measuring the intelligibility of the Light Programme series *Topic for to-night* undertaken by the B.B.C.'s Audience Research Department. From this it appeared that the target audience as a whole,¹ for whom the series was designed, grasped only a little over a quarter (23 per cent.) of the ideas and information contained in the talks. Mr. Belson adds: 'The ideas and information which were understood were not, however, necessarily those which the speaker had in mind as the most important in his script. The quarter which the average man understands is, as it were, a random collection of the ideas presented to him, a collection in which subsidiary points are, if anything, likely to figure unduly.'² If the loss of nearly three-quarters of a speaker's output seems extravagantly high, it is encouraging to remember that this is about the level of efficiency expected of an internal-combustion engine, and considerably better than that of a railway train. Moreover, once the waste is recognized, the first step has been taken towards its elimination. Analyses of the relation between measured intelligibility and certain definite features of broadcast talks, such as sentence construction, choice and method of using examples and number of points covered, has shown that in this, as in so many other things, it pays to pay attention to results.

I pass now to consider the peculiar difficulties of communication in the social sciences, by which I mean all those studies which seek to explain the behaviour and relationships of human beings and the nature of their customs and institutions through the method of inference from accurate observation which is common to all scientific investigation. The obstacles to successful communication to be faced here are formidable indeed. Most fundamental is the fact that a section of the public, and indeed of the educated and influential public, finds the whole idea of the scientific study of social problems repugnant. Communication is impossible because ears are deaf and sets switched off. By way of illustration, I may quote from the *Letter to posterity* broadcast in 1952 by the Warden of Merton College, Oxford, in which he refers to the invasion of Oxford by 'studies which by their titles suggested a humane subject-matter, but claimed, ominously, to use the methods of natural science. This invasion was no rude assault; it was a flattering influx of strangers, more eager to share the prestige of the university than to reform it. . . . Given peace, I think they might have been quite happily absorbed.'³ The speaker evidently admits no suspicion that these strangers might have some significant contribution to make to learning in their own right. The best that could, in his view, be hoped for is that they should be absorbed as decorously as possible by older and more reputable disciplines.

The social sciences are, moreover, themselves directly descended from

¹ There were, of course, marked differences related to age, sex, education, occupation and tested intelligence.

² *B.B.C. Quarterly*, Summer 1952.

³ *The Listener*, 24th January, 1952.

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pre-scientific studies, and they have hardly yet managed to live down the effects of an unfortunate inheritance. Anthropological studies were born not amongst African tribesmen, or in the Australian bush, but in the Reading Room of the British Museum where the late Sir James Frazer compiled his monumental *Golden Bough*. Psychology, likewise, has only gradually cut loose from its philosophical ancestors. Originally it rested upon no better an empirical base than the introspections of academic philosophers. The economists, too, were long content to elaborate deductive theories in complete seclusion from the hard realities of the market place. In every branch of human studies the passage from the speculative to the scientific has been difficult and slow.

Largely for this reason the social scientists continue to use inappropriate means of communication. Although there are now some signs of change, the ratio of books to papers and articles produced by social scientists must still be far higher than that which is customary amongst their colleagues in the natural sciences ; and, if papers are relatively scarce, abstracts of papers are rarer still. Any new material in sociological books (as in works on history, philosophy or literature or other 'arts' subjects) is apt to be deeply embedded in a discursive review of the whole subject. Original contributions are heavily outweighed by the author's repetition in his own words of things that have often been said before ; and literary quality ranks hardly behind informative content in the estimation of merit. The editor of an important series of sociological volumes commented to me the other day upon the difficulty of publishing a contribution, the greater part of which consisted of a bald list of historical occurrences designed to illustrate a theory as to the rhythmical sequence of a certain type of event. The point at issue was not the soundness of the theory or the validity of the evidence adduced in support of this. It was the unreadable quality of a list which raised a problem. I am in no position myself to judge of the merits of this particular study, which, indeed, I have not seen. But I quote the incident to illustrate the fact that in the social sciences the channels of communication may be blocked for any contributions to knowledge which necessarily make unattractive reading. This would not, I think, happen in the natural sciences.

Please do not misunderstand me. These remarks are emphatically not to be taken as belittling the virtue of literary excellence. They are simply a plea for the use of the right tool for the right purpose. To say that a work of art and an account of a scientific investigation are two different things is in no way to denigrate the former. Indeed, it has nothing to do with the merits of either. I am concerned only to make the point that communication in the social sciences will continue to be obstructed until we learn to use instruments similar to those which the experience of the natural sciences has shown to be effective vehicles for the transmission of scientific knowledge. Up till now the social scientists have failed fully to emancipate themselves from a tradition which has deep roots in our cultural heritage—the tradition that an essay in the spoken or written word is primarily to be judged as an artistic performance.

This practice of treating a written or spoken communication as an æsthetic performance is itself probably derived from the powerful influence exercised by classical studies upon our educational and cultural habits. Since the study of human affairs has, until lately, been largely monopolized by persons trained in the disciplines where this influence is strongest, it is not surprising that the infant social sciences are still inclined to conform in this respect to a pre-scientific tradition. As they grow up, we may expect that they too will produce papers rather than books, and statistical tables rather than elegant essays; for the truth seems to be that in every sphere what is exact and informative can seldom be made easy or enjoyable reading. In my childhood certain games used to be advertised as being both entertaining and instructive. The joint objective was seldom realized. The *Radio Times* and the *News of the World* serve different purposes, though they happen to have reached much the same circulation figures.

In the meantime the discussion of human affairs continues to be conducted in the press, and indeed sometimes also in the works of scholars, with little regard for the demands of scientific precision. There is something of a vicious circle here. The means of communication employed preclude the use of mathematical symbols and similar vehicles of accurate expression; while the absence of these instruments encourages modes of thought which have no need of them. One or two illustrations may bring the point home. In an article published in the *British Journal of Delinquency*,¹ Dr. Peter Scott analysed 500 cuttings from the British press on the ever-popular subject of juvenile delinquency. Well over half the authors were journalists and contributors to correspondence columns: the rest consisted of police officials, magistrates, clergy, teachers, politicians and local councillors and a small proportion (about 1 per cent. or 2 per cent. in each case) of psychiatrists, psychologists, social workers, lawyers and prison officials. The variation (and the contradictory nature) of the opinions expressed is remarkable. Thus 2.4 per cent. considered juvenile delinquency more or less a 'natural' phenomenon; 4 per cent. thought it was due to inborn factors; 23 per cent. found the cause lack of basic necessities such as living space; while a rather small proportion fastened on other environmental factors outside the home. Parental failure in responsibility or affection was blamed by 49 per cent. of broken homes by 11.2 per cent., while modern social trends as 'governmental mental coddling' or 'the reaction to Victorianism' were quoted by over 33 per cent., and more religious teaching was demanded by 12 per cent. As to treatment, 35 per cent. wanted this to be more severe, while 1.2 per cent. held the opposite view. More use of psychological methods was demanded by 12.5 per cent., and vehemently opposed by 5.8 per cent. Dr. Scott's own gentle comments are worth quoting. 'The majority of contributors seemed to be giving an honest opinion. . . . The high suggestibility of some contributors, notably speakers at public meetings, was apparent. Thus, after the publication of an opinion by a prominent

¹ July, 1950.

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person (by no means always an authority), the same opinion would be borrowed by speakers all round the country for a short while. Bowdlerism was commonly observed. The outstanding finding was the astonishing variety of opinions given and the fact that, in the great majority of cases, each contributor seemed certain that his own was the correct answer. There was no hesitation in stating dogmatically not only the cause, but the cure. Facts, figures and scientific methods were very rarely used. . . . With very few exceptions, and invariably in the case of popular opinions, a directly opposite view could be discovered amongst the material. For example, the clubs for young people were considered not only essential but also a menace, psychological methods were useful and dangerous, there was to be more use of the stick and less direct punishment. This, as in any other sphere, must necessarily imply lack of knowledge, wide variations in the material studied, or both.'

All empirical science depends upon exact observations, and exact observations are, of necessity, nearly always quantitative. My second example illustrates the light-heartedness with which even eminent scholars unversed in a scientific approach to human affairs, and using the media of mass-communication, will toss off quantitative statements unsupported by quantitative evidence. Mr. Alan Taylor (himself a distinguished historian and Fellow of Magdalen College, Oxford), writing in the *Daily Herald* of 13th June, 1953, follows the unexceptionably precise statement that 'there are still fifty male Members of Parliament to every woman', with a categorical assertion that 'most women vote as their husbands do', though 'some wives of Labour husbands vote Conservative', whereas 'no wives of Conservative husbands vote Labour' (i.e., presumably not one in an electorate of nearly 35 millions, of whom rather more than half are women). This last statement, at least, is to my own knowledge untrue, though without a sample survey, carefully designed, I have no idea how many are the exceptions to Mr. Taylor's generalization.

It will perhaps be argued that those who write in the popular press descend (though regrettably) to the level customary there. This may be true : if so, the implication that only inaccuracies can be made widely known is deeply defeatist. Happily, it is itself only an unproven hypothesis. Be that as it may, however, the fact remains that even at a more serious level we are a long way from having solved the problem of first attaining, and then communicating, quantitative precision in the study of human affairs. On every side, both the intelligent understanding of social and political questions and the wise direction of policy are dependent upon numerical factors. We are told, for instance, that the facilities offered by the National Health Service are abused by persons who pester their doctors about trifling or imaginary ailments. If this is so, it makes all the difference to an assessment of the pros and cons of this service to know whether it is a thousandth, a hundredth, a tenth, a fifth, or even a half of the public which indulges in these practices. Similarly, a correspondent writing in *The Times* of 29th January, 1953, about the misuse of the National Assistance Board's grants by ingenious ne'er-do-wells gave

no hint of the proportion of the Board's allowances which is thus frittered away. The answers to these questions (which are in all conscience difficult enough to reach) are incommunicable except in numerical or even statistical terms, and cannot, therefore, be communicated through channels which reject the use of these symbols or to minds incapable of being tuned to receive them.

It is, indeed, remarkable how many implied quantitative judgments figure in the discussion of any topics of public interest. To illustrate this point, I have scrutinized the first leading article in *The Times* in fifteen consecutive issues from 15th June, 1953, to 1st July, 1953, inclusive. Time prevents a full analysis here, but I would quote from one example—admittedly a striking one, but easily paralleled from others—namely the issue of 18th June, 1953. This opens as follows: 'The people of Berlin have a strong revolutionary tradition, and it may be that only the Russian Army prevented 1953 from ranking in history with 1848 and 1918. The events of the past two days in east Berlin have conformed closely to the pattern set by earlier—and successful—revolutionary movements. Once again Berlin's initiative has touched off similar outbreaks in other cities. Mounting discontent, incapable of finding expression or redress through peaceful channels, has broken out in spontaneous demonstrations which have had the obvious support of the mass of the population.' Faced with these sentences, the quantitatively-minded reader wants to ask a question at practically every full stop. How is the strength of a revolutionary tradition measured, and how strong is this one? Just how closely have the events of the past two days conformed to the pattern of earlier revolutionary movements, what are the divergences and how is their significance to be estimated? In what respects are the outbreaks in Berlin similar to those in other cities, and how is the balance struck between like and unlike features? At what speed is discontent mounting, and, if the mass of the population supports the revolutionary outbreak, how large is any dissentient minority? And so on.

My final example is taken not from the press, but from the highest academic levels, namely Dr. Arnold Toynbee's *Study of History*, on which Mr. L. F. Richardson has commented in an article under the title *Is it possible to prove any general statements about historical fact?*¹ Mr. Richardson tells us that for eleven years it has been his own habit to read alternately books on history and on statistical method; and it is apparent that he has not kept the two parts of his mind required for these activities isolated in watertight compartments. He points out that 'To any proposed historical generalization it will usually be possible to find some exceptions. So the question is whether the exceptions are sufficiently numerous and important to invalidate the proposed general statement? Problems of this sort have been considered by statisticians for centuries. They have by now developed an agreed technique for deciding such questions. It all depends on counting.' . . . 'If this valuable technique is to be applied

¹ In the *British Journal of Sociology*, March, 1952.

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to history, it will first be necessary to specify a type of historical event, and to mark off a region of space and time, so that the number of such events in that region can be counted.' Mr. Richardson goes on to observe that 'To collect all the events in the specified class is certainly the ideal, and is occasionally attainable. Thus Toynbee asserts that there have been only twenty-one civilizations, and he gives a list of them all.' Mr. Richardson then explains what is familiar ground for every statistician, how random sampling methods can be used to avoid bias in selection in circumstances in which it is impracticable to examine every individual in the specified class ; and proceeds to describe the standard statistical procedure for determining whether two attributes, say A and B, are associated or independent. For the latter purpose it is necessary to count the number of relevant events which fall into each of the following four classes—that in which both A and B are present ; that in which A is present but not B ; that in which B is present but not A ; that in which neither A nor B is present. An X^2 test is then applied. As Mr. Richardson points out fairly enough : 'A common mistake in popular discussions is to attend to less than four of these possibilities, and to ignore the chi-squared test. Such arguments are inconclusive.' Dr. Toynbee's work, however, 'offers a wonderful collection of interesting facts which support his generalizations ; but he seems to ignore the question whether his selection was a fair sample'. Further, Dr. Toynbee 'makes many assertions about the association of attributes, for example that civilizations have arisen in hard rather than in easy environments. This would require a 2×2 table. He afterwards qualifies this by noticing that the challenge of the environment can be too severe : proof would accordingly involve a 3×2 table of six compartments. While reading Toynbee's book I kept watch for any problem of association of attributes in which the minimum four compartments were all mentioned, but I did not find any. In that book events are described, but seldom counted ; nor does the chi-squared test appear. The statistical comment must be that although Toynbee has noticed, illustrated, and explained many associations of attributes, he has not gone so far as to provide a satisfactory statistical proof of the existence of any of them.' Mr. Richardson adds that 'To complain about lack of proof at this stage would be sheer ingratitude'. Relations have to be noticed or suspected some time before they are proved. The 'relations which Toynbee has noticed are such that, if they were proved, they would be of great importance'. But for the proof which is essentially quantitative, we are still waiting.

Many of you will, I am sure, by now have difficulty in restraining the comment that, if the discussion of current topics is to wait upon researches that take many months to execute, then the supply of news, as we know it, will come to an end ; and that the same fate will befall historical writing, since records of the past are seldom sufficient to allow recourse to the rigorous techniques that Mr. Richardson, for instance, advocates. The problems of exact communication will then be solved by the simple device of giving up the attempt to communicate. All this is true. But the sensible solution is, of course, to be sought elsewhere. Of necessity,

the decisions of both public and private life are largely the result of guesses based on inadequate data ; and such no doubt many of them will always continue to be. The true moral, I submit, is rather that the line between objectively established fact and subjective speculation ought to be more sharply drawn. What we need is better appreciation and better communication by both historian and journalist of the essentially quantitative nature of their material ; and of at least the relevance to this material—even in such unexpected areas as a study of the origins of civilizations—of statistical concepts which are included in the everyday equipment of scientific research.

Certainly the quantitatively-minded social scientist is acutely aware of a problem of communication of his own. The gulf that separates those whose immediate reaction to any topic is quantitative from those whose thought is not habitually numerical is wide indeed. One has often the impression that across this gulf effective communication is impossible. Nothing, however, succeeds like being right. In recent years some at least of the findings of improved techniques of measurement are beginning to command the attention, if not of the public at large, at least of those most likely to be affected by them. It may still be the fashion for the public (with cheerful disregard for the quantitative facts of the case) to ridicule the Gallup and other social surveys. But the professional politicians are not so light-hearted. And with reason. In this country the error of the Gallup forecasts of the voting in seventeen by-elections (in sixteen of which the successful candidate was rightly predicted) averaged under 2 per cent. In the 1945 General Election (the result of which took nearly all newspapers and professional politicians in all parties by storm) the Gallup error was under 1.5 per cent. ; in the election of 1950 it was 0.7 per cent. ; and in 1951 0.9 per cent. Even in the 1948 Presidential election in the United States, which is so often quoted as the classic example of disastrous forecasting, the poll only gave the Democratic candidate 5.5 per cent. less and his Republican rival 3.7 per cent. more of the total votes than they actually received ; though it so happened that in this particular case even this margin was sufficient to lead to the wrong candidate being predicted as winner.

In the time available I have only been able to touch upon a few of the many problems that beset the process of communication, more particularly as it affects the social sciences. Nothing has been said, for instance, about the semantic confusion that prevails in the literature of the subject or about the continued obsession, abundantly illustrated in that literature, with matters that have purely verbal significance. But a journey into these fields would, I fear, exhaust your patience, and would certainly take us beyond the limits of, I hesitate to say, agreeable, but even tolerable, communication.

THE TRAINING OF SPECIAL LIBRARIANS IN THE UNITED STATES

BY HAROLD LANCOUR, A.B., B.S., M.S., Ed.D.

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THERE has been a good deal of grumbling going on in my country at the way in which librarians are trained for their profession. No one seems to be satisfied with the current state of affairs but of all the unhappy groups none speak with greater vehemence nor more fervidly than the special librarians. 'If other professions,' says a prominent music librarian, 'ran their educational systems with no more regard for specialization than librarianship does, one shudders to think of the state our society would be in.'

As most of you know, training for library work in North America (I use the term advisedly for the Canadian and American systems are more alike than they are different) has been formalized and is conducted in institutions of higher education. Professional library training, as a matter of fact, is at the post-graduate level and leads to the Masters Degree. Yet it has not always been so.

Prior to 1887, the year Melvil Dewey opened the first American library school at Columbia University in New York, preparation for library work was based on the apprenticeship method. Inasmuch as the 'public' library as we know it to-day had not yet developed out of the social libraries which had spread so rapidly over the eastern half of the U.S. during the 18th and early 19th centuries most early apprenticeship training could be considered as having been training for special library work. The early libraries were not for the most part 'general', if we assume that is the opposite of 'special', for they were those of historical societies, law libraries for the use of bar associations and legislative bodies, libraries of local agricultural associations, mechanics libraries for young technical workers, apprentice libraries, also for trainees, and mercantile libraries for businessmen in urban commercial centers.

During the closing decades of the 19th century the broader public library supported by the community and conceived as an instrument of general popular education had developed and spread. At the same time the number of colleges and universities, each with a library, had been increasing. Thus it was when library leaders gathered together in 1876 to found the American Library Association the public librarians and university librarians made up a sizeable majority. It was they who felt the need for a source of trained personnel and urged Dewey, who was Columbia University librarian, to get on with it.

Dewey's plan for a library school which he submitted to the ALA in 1883 reflected two major decisions which had been made, (1) that librarians should be educated through a professional school rather than by apprenticeship in libraries, and (2) that the curriculum should be thoroughly

practical embodying the best practice of the moment, with little consideration to theoretical studies. To use later terminology, the curriculum was based on current activity analysis. As libraries had already found their basic organization in their functions, the curricula of the first library schools were specifically designed to train in these several functions, namely, cataloging, classifying, order work, circulation, reference. It should be noted that training in all functions was given to all students. The details constituted a solid body of procedures, the mastery of which became preparation for professional library work.

At about the same time John Cotton Dana, librarian of the Newark Public Library, with several other progressive colleagues became aware that there was a large body of potential library users whose special needs were for the most part neglected. These were mainly among the commercial, business, and industrial groups. The immediate result was the formation of special departments within certain of the major public libraries to provide specialized service to these groups. By 1909 the number of librarians involved with such specialized services had grown so large and their community of interest so great that they formed the Special Library Association.

It was not long before library schools, of which there were now several, were receiving requests for special training to prepare workers for these newer and more specialized activities. Actually in point of historical fact the need first arose in relation to library work for children and in schools. As a result, a training school for children's librarians was opened at the Carnegie Library at Pittsburgh in 1901. This was followed by similar courses at Western Reserve University and the St. Louis Library School. All three were followed in turn by programs of study designed to train school librarians and these have now become common.

Later, by the 1930's, the demands on library schools to offer specialized training had become so great that there was a rapid proliferation of special courses which were added to library school curricula to satisfy the demands of subject pressure groups and which were designed to prepare students for work in a great variety of libraries.

Meanwhile it soon became evident that the purely practical approach to library training was so intellectually impoverished as to offer little stimulation to the student nor, more importantly, was it adequate preparation for the demands of an emerging learned profession. The result was a continuing reconsideration of the purpose and nature of professional training and a steadily progressive development into the present theoretically oriented training of professional emphasis placed at a high academic level.

This approach to professional education placed much less importance on practice and much greater emphasis on principles. It was felt that if an intelligent student could understand the reasons for library techniques, he would quickly master the skills as soon as he spent a little while on the job.

What happened was that all students received a common core of uniformly essential material having to do with the organization and

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operation of libraries and the organization of library resources. This was followed by a group of optional courses in which, presumably, a student learned how to be a music librarian or a law librarian, the librarian in a research organization, a university, or a public library.

Starting just before the last war and continuing after, when the library profession critically reviewed its training facilities, these specialized courses came in for particular attention. Special librarians were saying that the library schools were not turning out students interested in special library work. Library educators were complaining about the high cost of offering several specialized courses each of which could attract but a handful of students.

Taking a cold look at these specialized courses a number of educators pointed out that they bore a marked resemblance. They were all courses in library administration, based on the same set of basic principles. With the shift in emphasis to theory and principles from practice this became more and more true as well as evident. They differed by and large only in the examples used to point up the practical applications of the principles and in the documentation used to describe and substantiate these applications.

A paramount difficulty in giving highly specialized training in the American system where training precedes employment was that few students were prepared to make an intelligent decision as to exactly the type of library work they wished to follow. Most library educators felt that Ernest Reece, at that time holding the Melvil Dewey Professorship of Library Science at Columbia, stated it well in saying : ' . . . To put it more generally, librarianship still is not sufficiently differentiated and specialized. A more fundamental answer is that probably the preparation never ought to be partitioned to such a degree. If the librarian is to be roundly equipped, it would seem that the important things are, not the adaptations and the other specifics, but the central and universal acquisitions which he might hope to use wherever he is. To take any other view would result in narrowness. The general subjects, therefore, should remain dominant, other elements being merely a fringe. The fact that librarians still like to migrate and that there are few certification bars or other restrictions to keep them from doing so are all the more reasons for seeing to it that specialization does not begin too early.'

Special librarians have independently and in groups inquired into the kind of training most desirable for their branch of the profession. Recently library school faculties have, in general, interpreted the results of those inquiries as calling for (a) a thorough mastery of one or more subject areas and (b) a thorough grounding in the principles and practice of modern librarianship. They based their interpretation on such statements as the following from one of the outstanding technical librarians : 'In spite of all the differences of opinion as to the best type of preparation for special library work, and the resulting deficiency in specialized training, the fact remains that the special librarian usually differs from his colleague in the general library field in his background of subject knowledge, and in his experience with specialized subject tools. This increased subject know-

ledge may have come from the librarian's formal training, or may have been learned in the special library itself. Most often, it has been a combination of the two. However that knowledge is obtained, it is essential that the special librarian knows his subject field well enough to understand the printed materials which he handles, and well enough to be able to talk intelligently concerning its subject matter to the specialist for whom the information is being obtained.' The interpretation was likewise determined by the definition of a special librarian recently prepared by the Joint Committee on Library Education: 'A special librarian . . . is a librarian who, by virtue of special interests and talents, chooses to operate in a special discipline, and for that purpose requires a broadened and intensified knowledge of his selected field—to which he must adapt the library technics basic to all library practice.

'The inclination toward his subject mastery, possibly evinced before entering library training and adopted as a career prior to library training, must not be discontinued as library technics are encountered; the latter are to be moulded to the needs of the former, and the two must be studied and amalgamated with one end in view; the production of an individual who, as a librarian, can render a service that the general librarian is not competent to give. Several years may be necessary to make this situation (an ideal one) the general rule, but it is a condition of undoubted desirability. Library students of the present day, awakening to the attractions of library specialization as they study library technics, are still more in need of subject study, and the library schools have the responsibility of seeing that they get it. Otherwise the library schools do a disservice to the subject interests they endeavour to serve.'

Library educators then went on to point out that (a) above, subject preparation, was not the province of the library school but must precede or follow library training. They further contended that to give detailed consideration to the relatively minor variations in the principles and purposes of the various types of special libraries had resulted in needless and expensive fragmentation.

A lucid statement of this point of view was given by Dean Carl M. White of Columbia University School of Library Service: 'As we looked at what was being done in the various administrative courses, those parts which were concerned with the literature of the speciality afforded real ground for differentiation, but we concluded that the different administrative courses were in their basic essentials trying to interpret for the student what happens in developing and putting across a library program. We reached the conclusion that a comparative approach to this question of programming would be the most useful and meaningful way in which it could be conveyed to the student.

'Let me reiterate again the situation that library school administrators have long been aware of and that is the unrealistic nature of our former so-called specialization. Our purpose was to educate people to enter a profession, yet in effect we were training them or seeming to train them for only a segment of that profession. Then on top of that experience we found that the specialization which we were laboring so hard to give

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them actually breaks down in practice. It was only a seeming specialization. To give students a few common courses in the first half of their year of preparation and then to offer them a series of electives in college library administration, public library administration, and so on, and leading students to believe that they were specializing by that act was in our view misleading.'

Now, I do not want you to get the impression that the special librarians are satisfied with the present state of affairs. Far from it. A favorite sport of special librarians is to collect the catalogs of the 35 accredited library schools and to tabulate the courses offered in special library work. The results of such investigations are, to special librarians, a never-ending source of irritation. Almost nowhere can they find such old time comforts as *Lib Sci 52, How to Manage a Special Library* or *Lib Sci 300, Special Library Problems* or *LS6, The Administration of a Music Library*, etc., etc.

The truth of the matter is that special librarianship, especially when it is broadly interpreted, has grown so large and is of such pervading importance that training for it is completely integrated into the whole new curriculum. Library educators provide in library schools intensive preparation in the bibliography of a wide variety of subjects. They also make continuing and specific effort to attract to the schools students with advanced subject training and to direct them, insofar as it is possible, into special library work.

SPECIAL LIBRARY TRAINING AS IT IS IN THE NETHERLANDS TO-DAY

BY DRs. C. VAN DIJK

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THE SPECIAL LIBRARY SITUATION

IN order to gain a thorough understanding of the aims of special library training in the Netherlands as designed after the second world war, it is first of all necessary to obtain some idea of the special library situation in that country.

Special library organization was considerably delayed in the Netherlands. Until the nineteen twenties there were two clearly defined types of library : on the one hand there were the university libraries (including the national libraries) for purposes of scientific research and academic instruction, while on the other hand the public libraries, with their definite social and educational objectives, were aimed at the widest possible public. Of course, even then there were already a number of libraries which could not be included in either of these groups but were scarcely known, let alone recognized as forming a separate group of their own. Inevitably the professional library world occasionally came into contact with individuals who claimed to be librarians for some establishment or institution or other, and who also freely brandished the word 'documentation'.

However, this word 'documentation' alone was already sufficient reason for hastily disowning these strange individuals. It is greatly to the credit of the NIDER, the body which represented the Netherlands in the international documentation movement, that it kept alive the spirit of documentation in these and the following years and gave both moral and technical support to many people in those institutions. A series of publications, lectures at annual conferences and several courses on documentation all contributed towards a growing knowledge of the significance of good documentation in ever-growing circles. On the other hand the propaganda for the Universal Decimal Classification in particular, which the NIDER had undertaken, met with strong opposition in the world of professional librarians.

Meanwhile libraries of the third category had attracted qualified staff from the public libraries, and a few other figures from the industrial libraries had achieved recognition in the library world as colleagues whose opinions were not to be dismissed.

* Nederlands Instituut voor Documentatie en Registratuur (Netherlands Institute for Documentation).

** Nederlandse Vereniging van Bibliotheкарissen (Netherlands Association of Librarians).

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This then was the position at about the time of the outbreak of the second world war, which soon reduced the Netherlands to an occupied country, cut off from the outside world. Whilst in the U.S.A., for example, during those years documentation developed rapidly in the service of war research, which was working at high pressure, for the Netherlands the war period was in many respects one of stagnation and, fortunately, of reflection. This reflection caused various personalities in special library circles to realize that when, at the end of the war, our country once again took its place in a greatly altered world, it would have an enormous leeway to make up in the fields of science and technology after so many years of isolation. It was obvious that the library and documentation services and particularly the special libraries would have to play an important part in this task. It was largely this realization which led to the establishment of the Special Libraries Organization in the Netherlands. There was a conviction that the problems with which the special libraries would be confronted, and to some extent were already confronted, could only be solved if the level of professional knowledge were to be raised by joint study and exchange of experience.

The examples in mind were organizations such as the S.L.A. in the United States (founded in 1910) and the Aslib in Britain (founded in 1924). However, the intention here was not to attempt an independent organization, but to seek refuge in an already existing one, the Netherlands Association of Librarians (N.V.B.). There were two reasons for this. In the first place the establishment of a new organization in a small country would inevitably have led to an unjustified dissipation of strength. Furthermore, by affiliation with an organization which embraced all professional colleagues, they would reap the benefit of the experience it already possessed and the facilities, such as periodicals, professional committees etc., which were at its disposal. Although the special libraries had every reason to seek affiliation with the organization of professional colleagues from the university and public libraries, it was an act of courage and foresight on the part of the N.V.B. to admit a group of people of whose professional ability, with a few exceptions, there had not as yet been any evidence, and who openly declared that their interest did not arise from love of librarianship for its own sake, but from considerations of what they could usefully apply for the purposes of the enterprise or institution to which they belonged. It may be observed with satisfaction that neither party ever had cause to regret the form of organization chosen. On the contrary, it was stated on more than one occasion that the Section for Special Libraries (S.S.B.), set up in 1941, thanks to its energetic activity and the youthful enthusiasm with which it tackled the many problems and brought them to the notice of a wider circle, frequently stimulated colleagues in other and older libraries to reflect more deeply on their function and methods. Special librarians now play their full part in the Council and Committees of the N.V.B. and colleagues from the university and public libraries are regular and welcome guests at meetings of the S.S.B.

What kind of libraries were they then, which met in the S.S.B. ? The

original name of this group was Section of Special Libraries in the Fields of Commerce and Industry. This qualifying addition was subsequently omitted when it turned out that an increasing number of members came from libraries which could not be included under this designation, such as the libraries attached to ministries and other government departments, highly specialized research libraries, libraries serving social organizations and societies, etc. The position of the S.S.B. thereby became practically identical with that of the Aslib and the S.L.A. in which almost every type of library apart from university and public libraries found a home. In this way the term 'special' has a suspicious resemblance to the heading 'miscellaneous' in some classification systems. It lacks any clear reference to the positive nature of these libraries. This is not the place to enter into a discussion on the definition of special libraries. For our purpose it is sufficient to start with that type of library which originally formed the nucleus of this group, namely the industrial library. It is characteristic of libraries of this type that they only have a *raison d'être* as long as they form an integral part of the concern to which they belong. The aims and requirements of the concern set their stamp on the library's organization just as much as on its collection. The latter is in many cases by no means 'special' in the sense of 'limited to a single branch of science or technology'. In many libraries of this type more than half the required information lies outside the field from which the concern or institution takes its name. The librarian is then only able to fulfil his function if he is an extremely active member of the community he serves and has in addition sufficient prestige in the library world to ensure that he will have access to all sources of information. It was primarily this group of librarians who came into consideration when the question of professional training arose in the S.S.B. Naturally this problem soon became one of the most important tasks. There was no training whatever for the university libraries, and the framework and syllabus of the training for public libraries were such that it was out of the question for special libraries. Also of importance was the fact that public library circles made no pretence of being able to supply the needs of the special libraries, but were nevertheless prepared to place their training experience at the disposal of any plans for special library training. This offer of co-operation was gratefully accepted, at first for the preparation and later in the choice of the lecturers for the special library courses.

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When it became plain that separate training was necessary the questions arose : 'who ?', 'what ?' and 'how ?' What kind of special library official was to be trained ? What would be the syllabuses of the courses to be given ? How were these courses to be organized ? Obviously these questions could only be answered in that order.

First of all it was essential to have a clear idea of the level or levels of training which were desired and which, from a financial point of view, were possible in a small country. The primary consideration here was to

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supply the requirements of industry ; the secondary consideration was to produce officials who would be able to achieve a respected status in the library world. For this purpose it was first necessary to do something for all those who, either alone or with some clerical assistance, were responsible for a library in comparatively small concerns or in similar positions. A training course for this group could at the same time, if correctly planned, render excellent service to the assistants in the larger established industrial libraries. In the initial stages, in particular, account had to be taken of the fact that various large concerns were fully aware of the importance of good training for library and documentation staff. A second category in urgent need of instruction was formed by those who were engaged on information work in a special field, whether or not their duties also entailed running a special library.

It was decided to organize two courses which could be taken separately but which would together provide a full training for special librarians. The first course, directed mainly towards library technique and library administration, was started in 1946. The second, which was concerned more with literature searching and information work, began in 1947.

Quite independently of these the NIDER gave not only correspondence courses in cataloguing and classification, but also a course which was intended as a training for 'documentalists'. This course was meant primarily for those who were in charge of records, libraries and information work in small concerns. After contact had been established and a certain amount of friction had occurred, the conviction grew in both these educational bodies, although not without some pressure from industry, that since their aims were identical, continued separate action must result in a waste of strength and money. As a result of consultations the year 1950 saw the birth of full co-operation within the framework of a NIDER and N.V.B. Joint Committee on Professional Education. This committee is now responsible for the entire training.

On the strength of the combined experience three annual courses are now being organized, all of which terminate in an examination. The collaborating organizations have set up an independent examining board for these examinations, which includes as many people as possible who are not directly concerned with the training.

Training is now given for the Special Librarian Diploma (Course A), Industrial (Commercial) Archivist (Course B) and Information Officer (Course C). Although of great interest in itself, Course B requires no further discussion in this paper. We shall now proceed to a more detailed description of the two other courses.

COURSE A : SPECIAL LIBRARIAN

Qualifications for admission

The purpose of this course is to give the minimum training required for those who are engaged on library administration, whether as the head of a small library or as assistant in a larger one.

The entrance qualification is the secondary school leaving examination and a minimum of one year's experience in a library. In this connection it is important that secondary schools in the Netherlands give their pupils instruction in three modern languages in addition to Dutch. In the first years particularly there were many students taking the course who had had fairly long experience and this was naturally beneficial to the level of the courses.

Since the economic basis for a Library School was lacking, it was necessary to give courses mainly in the employers' time. This turned out to be advantageous in that it entailed a certain selection. Firms are more inclined to give the opportunity of taking a course to good employees than to those who are less proficient. Indeed the majority of those taking the course have their tuition fees and travelling expenses paid by their employers. This in turn implies that once a firm realizes the importance of a good training, it will do its best to ensure that the student whose fees it is paying receives every opportunity of studying and preparing for the examination to the best of his ability. The decrease in the average length of experience of those taking the course has resulted in the necessity to devote more attention to teaching methods during the last few years. Since the experience of the lecturers has meanwhile increased and there is a growing number of people whose services can be called upon, it has been possible to overcome this difficulty satisfactorily.

Programme

In order to avoid putting too much strain on the students and the firms employing them, it was necessary to limit the course to a maximum duration of one year. The course is given in about 125 instruction hours, spread over 25 days. Consequently during the period September to May (incl.) there are two days of instruction every three weeks. For the distribution of the subject matter of the course it was necessary to take into account :

- (a) The desirability of progressively increasing the difficulty of the matter ;
- (b) The desirability of varying the subjects taught each day ;
- (c) The necessity of spreading over the course as regularly as possible those subjects involving homework, e.g. cataloguing and classifying ;
- (d) The most economical arrangement with regard to the lecturers' time and travelling expenses.

It will be clear that it is a difficult task to achieve a reasonable compromise between these desirabilities every year.

In drawing up the programme for the course we are governed by considerations of the knowledge to be imparted to the students :

- (1) A proper grasp of elementary library techniques and insight into the main problems of library organization and administration ;
- (2) Some knowledge of internal industrial organization and of modern society, in which the connections between Government and Industry are continually becoming more complex ;

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- (3) Familiarity with the world of libraries and documentation outside their own industry, so that they may be able to take full advantage of the experience and sources of information available to others.

In accordance with the foregoing the instruction matter fell into three groups of lessons.

(1) *Library technique and administration*

The special library : functions, materials, personnel (3 hours)

Various forms of catalogues (3 h.)

Cataloguing (16 h.)

Alphabetization (8 h.)

Classification by U.D.C. (12 h.)

Subject indexing by catchword (7 h.)

Various types of library material, bibliographies,
selection methods (8 h.)

Administration : loan and circulation systems,
ordering, statistics, budget (4 h.)

Library organization and policy (3 h.)

Library accommodation (4 h.)

Essentials of book production (3 h.)

Binding (2 h.)

Documentary reproduction (3 h.)

Documentation and information (2 h.)

(2) *Organization of commerce, industry and government*

Principles of organization (3 h.)

Organization of commerce, industry and research
in the Netherlands (4 h.)

Industrial organization, internal (4 h.)

Organization of Government (5 h.)

Patent systems (5 h.)

(3) *Libraries, library associations, documentation institutions*

National professional associations (3 h.)

International professional associations (4 h.)

University and national libraries (3 h.)

Public libraries (2 h.)

Special libraries (2 h.)

Union catalogues (1 h.)

Information services (2 h.)

Archives (3 h.)

Documentation and standardization (3 h.)

In addition the programme includes visits to a patent library, a university library with a union catalogue, the binding department and documentary reproduction service of a large institution. At the end of the course all students are obliged to spend an observation period of fourteen days in one of the libraries stipulated for the purpose and to write a report on their experience there to the satisfaction of the librarian concerned. During the course two days are reserved for informal examinations, to enable the training staff and the students themselves to get an

idea as to what progress they have made and to accustom them to the manner in which they will shortly be examined.

The examination is partly written and partly oral. The written examination is mainly concerned with the student's proficiency in the application of library techniques such as cataloguing, classifying and indexing ; the oral examination is held primarily in order to be able to assess whether the candidate can usefully put into practice what he has learned during the course.

Organization

The courses are held under the auspices of the NIDER and N.V.B. Joint Committee on Professional Education. This body has appointed a small advisory committee for each course under the chairmanship of a member of the Joint Committee, the function of which is to give advice on programmes, lecturers and all matters which are of importance to the course. From time to time members of the advisory committee are present during the lessons, especially those given by new lecturers, and they are kept regularly informed by the course leader who is appointed for each course. This official attends as many lessons as possible and helps the lecturers to compile the syllabuses, which are sent to the students beforehand. He has to guard against cases of undesirable overlapping which may easily arise when there are a number of lecturers. Although didactically and organizationally it might be preferable to have a small number of lecturers, this has proved impossible in practice, since most lecturers who have a full-time occupation during the day can only devote a limited number of hours to giving lessons. This is precisely the reason why the course leader's task is considerably more than a purely administrative one. He regularly draws the attention of the lecturers to the importance of demonstration and discussion in the lessons, if necessary orders an extra lesson when the students seem to be having particular difficulty with any given subject, helps to check the homework and makes the preparations for rehearsal days. For his administrative duties the course leader can enlist the support of the office of the NIDER, where the secretariat of the Joint Committee has its seat. The courses are held entirely without subsidies. However, several Government departments and commercial organizations have always provided premises for our courses free of charge. If a course has about 20 students it can pay for itself. Any large increase in the number of students per course would have a definite adverse effect on the quality of the instruction. During the last few years two parallel courses have regularly been held. On the second course the lessons not given jointly are held mainly in the evening. Both courses prepare students for the same examination, but there is a certain difference whereby one course is intended more for personnel from technical libraries, and the other more for staff of non-technical libraries. This is only a slight distinction, but it does enable the demonstration material and homework exercises to be adapted as closely as possible to the student's experience. This is naturally important in the

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case of a course which has to be compressed into a limited number of hours. So far it has not been possible to hold courses elsewhere than in The Hague.

COURSE C : INFORMATION OFFICER

Qualifications for admittance

This was originally intended as a final course for special librarians, but it could also be taken by specialists doing information work, whether or not they were connected with a library. In practice it turned out that by far the greater part of the students belonged to this very category. After a few years the relevant conclusions were drawn and several alterations were made, in order to adapt the programme entirely to the requirement of information officers. A B.Sc. or B.A. degree is the minimum previous educational qualification. Practical experience may be accepted as an equivalent at the discretion of the Joint Committee.

Programme

From January to November about 80 instruction hours are given and are spread over about 18 days. In drawing up the programme we have in mind the information officer, who although not himself a librarian, nevertheless makes extensive use of libraries. Instruction in library organization is therefore given from the point of view of the user.

The information officer must also be able to analyse a document and make its contents accessible by means of indexing or classification. He must be familiar with the institutions which have information at their disposal and he must be able to find his way among the sources of information available there.

Finally he must be able to pass on the information he obtains in the right form, e.g. a bibliography, a collection of abstracts which he himself has made, or a complete literature report.

The subjects on which lectures are given can be divided into four groups :

(1) *Introductory lectures*

Introduction	(1 h.)
Organization and functions of an information service	(5 h.)
Library organization and technique	(4 h.)
Archives, organization and techniques	(2 h.)
Documentary reproduction	(2 h.)

(2) *Classification*

Fundamentals of classification, classification systems	(5 h.)
Indexing	(2 h.)
Fundamentals and structure of the U.D.C.	(8 h.)
Classifying by U.D.C.	(10 h.)
Extracts of the U.D.C.	(2 h.)

(3) *Sources of information*

Libraries	(2 h.)
Information services and non-library sources ..	(2 h.)
Various types of source material	(2 h.)
Social, economic and legal literature	(3 h.)
Technical literature	(3 h.)
Physical and Chemical Constants, technical data	(3 h.)
Patents	(4 h.)

(4) *Searching and reporting*

Searching : means and methods ; critical evaluation of sources	(6 h.)
Bibliographies and literature references ..	(2 h.)
Report writing : composition, outward appear- ance, language and style, illustrations, etc.	(6 h.)

The lessons on Report Writing are easily the principal feature of the course. The extensive syllabus for these lessons is more or less in the nature of a manual. During the course three reports have to be written, for which each student may choose from several subjects in his own special field. In order to obtain professional criticism of the reports, the staff of the course can call upon a number of specialists who are also prepared to set the subject for the examination report. This training in Report Writing is highly appreciated and has repeatedly attracted the interest of academic circles outside the sphere of special libraries. With regard to the lessons on Sources of Information, the student may cut out certain of them which are too far removed from his own special field. These lessons are always given in a specialized library. If, on the other hand, there are any students for whose requirements the standard programme is not entirely satisfactory in this respect, a separate solution is sought for them and this is usually found. For any students who desire it, the course leader arranges for them to spend a week at a library or with an information service.

Organization

For a successful course, 10 must be regarded as the average minimum number of students, and 12 as the maximum.

For the rest, Course C is organized on the same pattern as Course A.

Our courses have been held without interruption since 1946 and our diploma has now been awarded to a good 300 students. A constantly increasing number of them are working in university libraries. This is not unconnected with the fact that in recent years prominent members of our training organization have been placed in charge of university libraries ; this opens up new perspectives. Thus our training, which is still primarily intended to supply the needs of industry, has won a not inconsiderable place in the Netherlands library sphere.

Although what has been achieved is very gratifying, there is no place for the opinion that we have already reached our goal. The fact that the

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calibre of the students has fallen off somewhat demands our constant attention. Moreover, it is becoming increasingly necessary to organize a course for the managerial staff of special libraries. An appropriate programme is now being studied. For this purpose it will probably be possible to use a number of lessons from the information officer's course. The whole matter requires careful consideration, since in a small country there is necessarily only a very limited demand for a course of this kind. Furthermore, for years there has been a plan for a number of courses in the literature of special fields. The great problem is how to find lecturers who not only possess the ability, but also have sufficient time to devote to this work. But we are not pessimistic ; the 'to-day' of special libraries will certainly be followed by a 'to-morrow'.

There is still another aspect of our training to which I would like to refer. Our accomplishments could only be achieved by mutual understanding and good co-operation by all concerned. Our lecturers include the president of the Government Library Council, the Director of the Royal Library in The Hague, as well as the Director of the NIDER and the Chairman of the Board of the Central Association for Public Libraries. We cannot help feeling that the co-operation between the NIDER and the Netherlands Association of Librarians with respect to the training has helped to pave the way to further collaboration. Consequently great efforts are now being directed towards a combined edition of a Library and Documentation Guide, formerly two separate publications. I realize that there are many problems and controversies on which I have not touched. In the Netherlands we have not done much theorizing, perhaps even too little, but we have tackled the task by which, as special librarians, we saw ourselves confronted after the war. We have done what we could with limited means but considerable enthusiasm. What we have achieved is by no means a model training to be taken over by others, but we do consider it to be a modest contribution by librarians to the restoration of our industrial productivity which was so devastated by the war and its consequences, and thereby also a stimulus to a better appreciation of our worthy profession.

EDUCATION FOR SPECIAL LIBRARIANSHIP IN GREAT BRITAIN

BY ELIZABETH MACKIEWICZ, F.L.A.

Information Officer, Aslib

ASLIB has been concerned with education in the field of special librarianship from the first conference of 1924, when the subject was among those discussed. At that date there were two qualifications available in librarianship, the Fellowship of the Library Association and the Diploma of the University of London School of Librarianship. For the Library Association's examinations it was possible to study by correspondence, at summer schools, and in a very few places at part-time classes. The School of Librarianship offered a one-year post-graduate and a two-year undergraduate full-time course, and while some of the Diplomates entered public libraries, others went into private libraries, university and college libraries and industrial firms. Latin was a compulsory subject for entrance to the School, however, and this was a deterrent to science graduates who wished to train for the profession.

The Library Association had formed a committee on training as long ago as 1880 and the School had been running since 1919, and it is noteworthy that the representatives at the first Aslib conference turned to the School as the natural place of training for those in special libraries. Mr. Pearce said at the conference, that the person in charge of the special library or intelligence bureau was seldom exclusively a librarian, either by training or temperament; he was as much an information-user as a librarian. At that date the School's syllabus was the only one offering instruction of a suitable kind. Dr. E. A. Baker, then Director of the School, read a paper to the conference, and offered to try to provide whatever lectures the delegates felt appropriate to special library staff. At the second conference he announced a series of evening lectures on abstracting, indexing and classification but, owing to lack of support, the course was not held.

In 1929, again as the result of recommendations by Aslib, a new syllabus was drawn up by the School, and accepted by the Senate of the University, in which modifications in the course were made for science graduates, and proficiency in an alternative language to Latin could be offered to enable the scientist to be accepted as a candidate for the Diploma. Too few students enrolled for the course to begin until October 1931. Further revisions of the syllabus were announced by the Director, J. D. Cowley, at the twelfth Aslib conference in 1935.

When, in 1929, recommendations for a special librarianship course were made by Aslib to the School, the same suggestions were made to the Library Association, but without any immediate result. By 1937, however, the public librarians were seeking to amend their examination

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syllabus, and while the advent of war in 1939 deferred the new regulations, when these finally appeared in 1946 alternatives were offered for non-public library students as a result of Aslib's proposals, and, after only minor changes, the syllabus remains much the same at present.

To-day, the assistant in a special library may attend the School of Librarianship at University College, London, for a one-year post-graduate course and take the Diploma examinations ; a year's experience is required before the actual award of the Diploma. At present the undergraduate course is not held. Since 1946, however, full-time schools of librarianship, teaching for the Library Association's examinations, have been established in nine centres throughout the country. Part-time courses are held in many more places, largely at evening classes, and the correspondence courses, now organized by the Association of Assistant Librarians, cover nearly all the alternatives of the syllabus.

The Library Association offers Associateship and Fellowship, through two series of examinations, open to candidates with the equivalent of the General Certificate of Education. Practical experience and a minimum age are necessary before the award of either certificate. In the Final examinations, for the Fellowship, adequate alternatives are available, and it is possible for the special librarian to study subjects of immediate use in his work, and to draw on his own experience in answering the examination questions. Not all librarians go beyond their Associateship, however, as this qualification makes them Chartered Librarians and enables them to apply for most positions in librarianship. It is all the more unfortunate, therefore, that the papers in the Registration examinations, which form the qualifying test for Associateship, offer too few alternatives suitable to the special library. It might be expected that the papers at this level would deal only with the fundamental principles of librarianship common in all types of library, or that there would be questions or papers for non-public librarians. It is true that a move in the right direction has been made, by papers on the Literature of Science and Technology, and the Literature of Social and Political Ideas, as alternatives to the History of English Literature. In the paper on Organization and Administration, the general principles common to all libraries are covered, and the methods peculiar to either public libraries, university libraries, or special libraries and information bureaux. Further scope for non-public librarians is given in questions where the candidate may describe the methods used in his own library. The examination questions are now carefully designed so that the general ones may be answered with reference to any kind of library. Nevertheless, while the syllabus is sufficiently broadly phrased to cover the activities of non-public librarians, their knowledge of these techniques is not well tested by the examinations, particularly in Classification and Cataloguing, where too much emphasis is placed on the handling of books, and too little on the detailed analytical indexing which is needed to record the content of other material—and, to a certain extent, in Bibliography and Assistance to Readers, where too many questions deal with the historical aspects of book-printing.

Though teaching in full-time and part-time schools is intended for

students preparing for the Library Association's examinations, there has been a very recent tendency to broaden the scope of the lectures in some centres, to make them of greater value to special librarians by dealing with the actual problems they meet in their work, particularly in handling published material other than books, and unpublished documents. Wherever possible, lecturers have been drawn from non-public libraries for these classes. It has always been possible for students to attend classes without sitting for the examinations, and many students in special libraries have taken courses in this way, notably in classification and cataloguing and, at the School of Librarianship, in the special librarianship course held in the evenings. Courses designed for special librarians have also been held at Birmingham, Manchester, and the North-Western Polytechnic in London, and Loughborough College has planned such a course.

Since 1943, when the emergency recruitment of non-librarians into library work first created an urgent demand, Aslib has organized short introductory courses to special library work. These are intended for new entrants to the profession, and have proved most helpful to the successive groups of students who have attended. Recently, such courses have lasted a week and have included visits to a wide variety of libraries, as well as lectures on the elementary principles. An intermediate study course has also been arranged, lasting for an extended week-end, at which a single problem has been studied, through lectures and discussions, by experienced librarians and information workers. This is of great use to those in small organizations or isolated localities and provides an opportunity for the exchange of ideas and renewal of enthusiasm.

In special libraries and information bureaux today there are assistants of all kinds, from school-leavers to highly qualified research workers. The kind of work they do also varies from the pure routine of recording and circulating material to the extreme of preparing evaluative reports from the literature. At what stage these duties change from librarianship to information work is not strictly relevant to the present paper, and has in any case been the subject for heated discussion. It is generally true to state that, while very few people in special libraries are solely concerned with either the organization or the evaluation of their literature, at the two extremes the basic qualifications necessary to perform the functions efficiently are, on the one hand, a knowledge of librarianship techniques, and on the other, a sound specialist subject knowledge.

The fundamental principles of library technique are very nearly covered by the Library Association's Registration Examinations, but the information officer's work goes beyond the handling of literature to the comprehension and interpretation of data ; his need for languages and an ability to write clear, concise reports are nearly as important as his subject knowledge and, up to now, no essential qualifications or training have been laid down and accepted even within the profession. Aslib's Education Committee has devoted much thought and discussion to the preparation of a syllabus to cover such essentials, and it is to be hoped that definite proposals will soon be made. Besides the value of a publicly recognized qualification for information officers, the existence of a

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definite level to work towards would be an incentive to those in special libraries to improve their efficiency by studying.

Whatever the type and place of training of this kind, there is no doubt that Aslib is the only body in a position to make informed recommendations, and many of Aslib's members are anxious that definite action should be taken.

Discussion

MR. W. PEARSON (Ministry of Housing and Local Government) said that the new syllabus adopted by the Library Association in 1948 was a great advance, and good progress in educational facilities for the special librarian had already been made. He considered that in fact the emphasis on special librarianship and literature of special subjects in the final examination was beginning to weight the examination in favour of the special librarian rather than the public librarian. Generally speaking, the pattern of training in the United Kingdom in most fields was one of training while on the job, and the pattern seemed unlikely to be altered in the case of librarianship. The implementation of the Library Association syllabus was capable of improvement and moderating committees had already been set up to this end. He suggested that Aslib should approach the Library Association with a view to securing modification of the syllabus when the special librarians' requirements had been exactly defined.

MR. V. D. FREEDLAND (British Hat and Allied Feltmakers Association) said it was important to remember that 70 per cent. of special libraries were staffed by one person only, whereas the Library Association training was primarily suitable for people going into large libraries with adequate staff. It was not necessary for the librarian of a manufacturing company to learn the library rate in Wigan and similar local government data. The best course was for Aslib to invite the library schools to introduce a three-year part-time course for special librarians leading to their own diplomas which would be recognized by Aslib. The higher national certificate or the City and Guilds certificate provided a qualification worthy of emulation.

MR. P. H. SEWELL (North-Western Polytechnic Library School) emphasized three points : first, the existing Library Association syllabus contained much that was useful and relevant to the special librarian. Secondly, this syllabus was being constantly scrutinized and modified and for this purpose a formal liaison between the Education Committees of the Library Association and Aslib might be profitable. Thirdly, courses for special librarians not confined to the Library Association syllabus were already being offered at some centres. At the North-Western Polytechnic he had well over 100 part-time students from special libraries.

MR. J. E. L. FARRADANE (Tate & Lyle, Ltd.) introduced the term information scientist. He said he was a person who might be defined as 'a research scientist who specialized in collecting, collating, organizing and disseminating published or unpublished, recorded or unrecorded (verbally communicated) facts of a scientific and technical nature, acting thereby in the capacity of agent for others, providing information and ideas stimulating to research and development, and carrying out work relating thereto, e.g. recording, abstracting, translating, editing, publicity, research liaison, administration (of junior staff). He should have a university degree (or its equivalent) in science or technology ; some research experience would be an advantage. He should have a wide general scientific knowledge, a flair for writing good English and also for abstracting, and good reading ability in at least two major foreign languages. He should be able to scan material rapidly and selectively and also to read, and assimilate what he is reading, at a high speed. Finally, though not requiring the qualifications of a librarian, the information scientist should be widely experienced in the use of libraries and other sources of information, in methods of searching the literature (including patents), and in methods of recording and classifying information. He should be the type of person who can maintain good relations with his colleagues.'

This was essentially a job for a research scientist who happened to work in a library instead of a laboratory. Such a person was a user of a library, not the organizer of a library. He should enjoy equal status with the scientific research worker and this

approach and outlook were not those of the Library Association course. There was now a great opportunity for Aslib to devise a course of training which could fulfil this requirement.

MR. B. I. PALMER (Education Officer, Library Association) said that the matter was largely a question of numbers. According to the 1951 Census, 15,000 people claimed to be librarians. Of these, 12,000 were known to work in public libraries and only 3,000 in libraries of other types, including subscription libraries. In the Final Examination, Part 3, the Library Association offered papers in some thirteen special subjects and since only one candidate often asked for them the cost per paper to the Library Association was extremely heavy. The examinations were subsidized from general funds. To extend specialization to the Registration Examination level would only result in further fragmentation and any scheme for special librarians only, based upon specialities, would be economically prohibitive. Members of Aslib should ask themselves whether, as subscribing members, they would be prepared to subsidize a system of examinations, or whether as potential students they would be prepared to pay examination fees which would necessarily be much higher than those which the Library Association, with its far greater numbers, could support.

MR. R. J. HOY (School of Oriental and African Studies, University of London) said that the response to the courses arranged in London to cater for the special papers of the L.A. Final Examination had been negligible, and that there seemed to be no need to look further than the Library Association syllabus, provided that it remained capable of adaptation to proved needs. There were three special Sections in the Library Association which could offer their hospitality to all members of Aslib. Each Section was continuously interested in professional education, and one Section had set up a standing sub-committee for scrutinizing L.A. examination papers, syllabuses, etc., and for making suitable recommendations to the Education Committee of the Library Association.

In the matter of Documentation, the Library Association's official policy was reflected in the following statement published in the *Library Association Record*, July, 1953, in connection with a resolution adopted by the Joint IFLA/FID Committee on Training in Rome 1951:

' . . . The word "Documentation" was first adopted by Paul Otlet and Henri la Fontaine, who became aware of the need for bibliographical organization and sought to give it a name that would distinguish it from the curator-librarianship prevalent on the Continent. It was taken over in this country by those in the special library field who had received no formal training in librarianship. They found themselves faced with technical problems, proceeded to solve them, and, in doing so, re-discovered librarianship and gave it another name. . . . Yet Bradford later observes "documentation is no more than one aspect of the larger art of librarianship" . . . '

MR. R. B. STOKES (Loughborough School of Librarianship) recalled that, when the new Library Association syllabus was drawn up, Aslib was asked to give its views and did, in fact, appoint a representative to serve on the Syllabus Sub-committee. If, as was reasonable, Aslib's views had changed and developed since then, Aslib should acquaint the Library Association of its present opinion. In the meantime, the Library Association sat in Chaucer House and glared at Aslib while Aslib sat in Palace Gate and glared at the Library Association. Even if all members of both organizations were joined together in a common effort, they would still form a small profession barely strong enough to make its voice heard in the country. At the end of the meeting he would wish to make a formal proposal that Aslib should ask the Library Association to join with it for the purpose of investigating the possibility of devising a common form of training which would meet the needs of all members of the profession, whether they were called librarians, special librarians, public librarians, university librarians, literature researchers, or any one of the manifold varieties.

DR. J. E. HOLMSTROM (Unesco) said that the point about his comparison of the special librarian's functions and those of the information scientist with the two poles of a magnet, which had been quoted, was that they faced different ways, but that

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strengthening one pole of a magnet automatically strengthened the other. This dual polarity was recognized in the organization of the appropriate committees under Unesco, there being an International Advisory Committee on Bibliography administered by the Libraries Division and, working in liaison with it, an Advisory Committee for Documentation in the Natural Sciences (originally the Provisional International Advisory Committee on Science Abstracting) administered by the Natural Sciences Department.

MR. A. H. RAINE (Brotherton & Co.) wished to ask Dr. Lancour if there was in the United States the same diversity in special libraries in respect of type and size as in the United Kingdom. Dr. Lancour replied that there was.

MR. D. J. FOSKETT (Metal Box Co., Ltd.) said that he agreed with Mrs. Mackiewicz that the Library Association Registration examination should be based on the fundamental principles common to all types of librarianship. Of the subjects suggested as comprising 'information work', only those in Part IV of the Dutch examination scheme outlined by Drs. van Dijk in his preprinted paper were not already covered by the Library Association syllabus. The Reference and Special Libraries Section of the Library Association had set up a sub-committee to consider these subjects with the addition of correspondence and business archives. His ideal was the unity of the profession ; to revert to Dr. Holmstrom's simile, one did not normally refer to a bar of iron as two poles but rather as one magnet.

MR. R. C. WOODS (Ericsson Telephones, Ltd.) said that the special librarian who had to work alone or perhaps with the help of a technician should undoubtedly be a graduate. The time for him to learn the background to his work was immediately after graduating. For the technician in the provinces, where there were insufficient students to make local courses economic, it would probably prove necessary for Aslib or some other body to devise a short course and to persuade employers to release students for between three and five months for this purpose.

MR. V. BISKE (Lobitos Oilfields, Ltd.) disagreed that training should necessarily be taken immediately after graduation. The flair for information work often became apparent only after a period in the factory. Persons with industrial post-graduate experience and a leaning towards information work were suitable candidates for a higher degree and Aslib should try to persuade the universities to include information work as an integral part of their higher degree courses ; likewise, specialized examinations for higher professional qualifications, for example, F.R.I.C., might include information work as a suitable subject.

Members might be interested to be reminded that the legal profession was an example of a complete profession forming one field of special librarianship—lawyers spent most of their time hunting through reports to find out what other people had already settled.

MR. A. E. CUMMINS (Chemical Society) said that, as a former Library Association examiner who had seen the Revising Committee at work, he could vouch for the sympathy shown to special library candidates, but he had recently been surprised that two candidates from a special library, whose work was known to him and whose knowledge and ability were not in doubt, had failed in the recent Registration examination. It would be useful to know how many candidates over a given period of years from each type of library had sat, how many had passed and how many had failed the Library Association's examinations.

MISS C. P. McMILLAN (Wiggins Teape Group Research Organization) asked how it was possible for the person in charge of a one-man library to satisfy the Library Association's requirements regarding practical experience under qualified supervision.

MR. B. I. PALMER (Library Association) replied that it was possible for another chartered librarian in the vicinity to act as supervisor.

MR. R. G. THORNE (Royal Aircraft Establishment) asked that the Council of Aslib should consider making a properly conducted statistical survey of the requirements of libraries which were members of Aslib and a similar survey of the facilities available for training.

MR. D. C. HENRIK JONES (Library Association) emphasized that the process of revising the examination syllabuses was a continuing one. The syllabuses could be

improved and he could assure the meeting that, without any shadow of doubt, any approach by Aslib to the Library Association on training for special librarianship would be most warmly welcomed.

DR. V. E. PARKE (Imperial Chemical Industries, Ltd., Billingham Division) recalled the discussions on the same subject at the 1948 Annual Conference which had yielded no practical result. He welcomed the greater desire for mutual understanding and co-operation between the Library Association and Aslib which to-day's discussion had shown. The outlook for progress in this field was now more hopeful than ever before.

DRS. VAN DIJK (Royal Dutch Shell), referring to Mr. Foskett's contribution, said that there was, on the contrary, *no* point in his scheme which was covered by the Library Association syllabus, or rather *all* were covered, though from a certain angle. The French had a word for it : *C'est le son qui fait la musique*. It was the approach to the subjects that mattered to the information officer quite as much as the subjects themselves.

MR. R. B. STOKES proposed and MR. L. G. KENRICK (Percival Aircraft, Ltd.) seconded the following resolution, which was carried *unanimously* :

'That this session of the 28th Annual Conference of Aslib requests the Council of Aslib to give careful consideration to the desirability of making a formal approach to the Library Association with a view to ensuring an exhaustive joint investigation of all aspects of the training requirements of special librarians and of the provision of adequate facilities therefor, and that due regard be given to the assurance made at this session that, without any shadow of doubt, any approach by Aslib would be most warmly welcomed by the Library Association.'

MR. W. PEARSON (Ministry of Housing and Local Government) asked if the resolution implied a time limit for the approach. Mr. Stokes replied that no time limit was desirable and was not part of the motion.

MR. A. H. HOLLOWAY (Ministry of Supply, T.P.A. 3/T.I.B.) said that the discussion had revealed two groups of speakers each with its own vested interests, and the motion appeared admirably suited to lead to the results which were obviously the wish of the meeting without pandering to either.

MRS. A. M. WHITROW (Incorporated Society of Auctioneers and Landed Property Agents) asked that Mr. R. G. Thorne's proposal for a statistical survey should also be submitted to the Council. The Chairman stated that the Council and any joint committee that might be established would certainly take the proposal into account.

(Written contribution accepted by the Chairman.)

MR. A. R. CAMERON (A. V. Roe & Co., Ltd.) said that it had not been his intention to contribute to the debate until Mr. Palmer made his statement, in reply to the Chairman, that three years' supervision under an outside chartered librarian was acceptable to the Library Association in lieu of service directly under such a librarian. This, of course, was well known. What was not well known and, indeed, not at all clear was what this supervision amounted to. To consider two cases : (1) That of an experienced librarian who had been paid for perhaps five, ten or fifteen years for looking after his concern's library. To him it might well appear to be just about the most effective obstacle to the Library Association qualifications that malevolent human ingenuity could devise. Has he to go to his directors and say : 'I want to have a man in to teach me my job ?' (2) That of this librarian's young assistant. Here the potential embarrassment would appear to be only slightly less.

One or two further observations—it was disappointing that so little attention was given to those not quite young. Most professions offered alternative qualifications. The library schools might offer diplomas ; Aslib might offer rewards for theses.

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Editor's note : As an experiment this year, facilities were provided for a number of discussion groups to meet on the Saturday evening. Each person attending the conference was given the opportunity of stating which out of a number of subjects would interest him or her most and was assigned to one of the groups on the basis of this choice. The resulting meetings varied greatly in usefulness, but the experience gained will be very helpful to the Conference Committee on future occasions. Lack of space makes it impossible to report in full on the meetings, but the following summaries are based on the reports sent in by the recorders for each group. They indicate the range of topics covered and record any resolutions passed.

A. PRESENTATION OF TECHNICAL INFORMATION

(i) *Chairman :* MR. F. B. ROBERTS (*Engineering*)

The Chairman, in his opening remarks, referred particularly to the manner of presenting information in technical journals. He stressed the importance of conveying the significant information as directly as possible.

The discussion centred largely on the need to encourage proficiency in writing among engineers, scientists and others. Reference was made to work already accomplished and in progress in this field, and a suggestion was made that Aslib should take some action, possibly in conjunction with other bodies working on the same subject.

(ii) *Chairman :* MR. D. J. FOSKETT (Metal Box Co., Ltd.)

Recorder : MISS I. M. SLADE (British Iron and Steel Research Association)

The Chairman introduced the subject by distinguishing between presentation in the sense of 'visual aids' such as films, diagrams, and other forms of display, and presentation in the sense of style of writing. It was decided to confine the discussion to written communication.

In the general discussion which followed, it was agreed that all special librarians should present information in a form suitable to the people they serve. This led to consideration whether special librarians should present their information as abstracts or in more detail. It was agreed that there were two classes of reader with whom the special librarian was especially concerned. Firstly, there were specialists, for whom abstracts were most useful. The abstract should enable the specialist to decide whether it was necessary to consult the original paper. Secondly, many special librarians were expected to present summaries of scientific work in simple non-technical language for people who were not specialists in the subject treated. It was agreed that this is often more difficult than normal abstracting and that many different types of summaries might be required, according to the use that was to be made of

them. Examples quoted were for briefing the higher management of a firm on what is being done by a research department, or to provide sales or publicity departments with the basis of technical information for the preparation of their material.

In view of the importance of clear presentation of information and the need to adopt one's style to different purposes, the group decided to ask the joint Sub-committee on Training to consider whether the writing of such summaries of scientific work should be included in the training programme for special librarians.

B. ABSTRACTING

Chairman : MR. V. BISKE (Lobitos Oilfields, Ltd.)

Recorder : MR. W. A. GROOM (I.C.I., Ltd., Paints Division)

In his introductory remarks the Chairman noted that, 'Among the topics which appear still to be unsettled are the claims of the indicative versus the informative abstract ; personally I would express the view that there should be a fairly definite line drawn, on the basis that a paper not including new experimental data should be the subject of a short, purely indicative abstract, whilst the informative abstract (i.e. one which attempts to summarize the paper) should be restricted to new facts. There is too often seen the type of space-wasting abstract in which a review or similar paper is summarized. Also, should abstracts be critical ? This may be difficult in the informative type, but in the indicative type just mentioned criticism could well be included. After all, the abstract is signed ; if it is to be purely impersonal then much of the point of such signature is lost.' He also invited discussion on the value of author's abstracts. At the close of the meeting the following conclusions were reached :

(1) The cessation of publication of *British Abstracts*, although regrettable, would not be a serious blow to the information services for which members of the Panel are responsible. Should *British Abstracts* be continued, it is suggested that its editorial policy should be governed by the fact of the existence of *Chemical Abstracts*, and that it should concentrate on covering gaps in the latter and also alleviating two special deficiencies of *Chemical Abstracts* from British viewpoint, namely : (a) late coverage of articles in periodicals of the American Chemical Society, (b) late coverage of British patents.

(2) It would be an advantage if all authors, when submitting papers to societies who appoint referees for such papers, were to be instructed to submit an abstract with the paper. Such abstracts could be checked by the referee at the same time as he deals with the paper and then sent to the appropriate abstracting journal. The objections to author abstracts could thus be largely overcome.

(3) Many papers could with advantage be given extended and more specific titles.

(4) It was generally felt that, for those organizations which are of a size to justify the cost, the making of abstracts framed from the point of view of the organization concerned is justified and does not repre-

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sent needless overlapping with the published abstracts of various societies, particularly in view of the delays inherent in the latter.

C. MICROFILM AND MICRO-OPAQUES

Chairman : MR. R. M. FISHENDEN (Atomic Energy Research Establishment)

Recorder : MR. R. C. WRIGHT (Royal Aircraft Establishment)

This meeting suffered from the fact that too large a proportion of the group were inexperienced and had come to learn rather than to contribute to the discussion. However, Mr. Verry was present and kindly put his knowledge at the disposal of the less experienced.

The Panel agreed to consider the subject in three main divisions :

(a) Techniques of making microfilms and opaques ; (b) Selection of material to be reduced to these forms ; and (c) Methods of use and exploitation.

(a) *Technique of making.* Mr. H. R. Verry, opening this part of the discussion, explained that two types of camera were available, the continuous and the automatic. The continuous, or flow type, copies documents at the rate of 10,000 exposures an hour ; it is normally made in only the 16 mm. size and will accommodate single sheets of a limited width but of any length. The conventional 35 mm. automatic microfilm camera is much slower, but may be preferred where quality of reproduction is of more importance than speed or cost. In all questions involving a choice of methods it was as well to remember that labour is much more expensive than machinery.

In the United States 16 mm. film was being used in the production of microcards. By the use of sheet microfilm, as many as 120 frames could appear in an area 5×3 in., and there was a tendency towards the use of microsheet negatives and microcards. Microprint was not as yet likely to find much use in this country.

Mr. Verry concluded by pointing out that space-saving was not the only virtue of microfilm. He had watched readers in a New York library consulting newspaper files ; they much preferred to do so with microfilm than to handle bulky volumes.

(b) *Selection of material.* Mr. R. C. Wright thought the most common reasons for using microfilm were to fill gaps, particularly in periodical runs, and to enable bulky originals to be discarded. Material no longer available by purchase can be borrowed and filmed, and the Royal Aircraft Establishment microfilms its own reports, partly as an insurance against loss and partly as a means of producing one or two copies in an emergency.

It was pointed out that some material is available only in the form of microfilm and that a considerable volume of American research reports resulting from defence contracts are available only on microcard.

On the whole, members of the Panel had experienced very little difficulty in selecting material for microfilming.

(c) *How to use the material.* The Chairman hoped to elicit any particular

difficulties which members had experienced in storing, retrieving and using microfilms and micro-opaques. He could see that there might be an unfavourable reaction from readers, particularly if, for example, it was difficult to locate a particular item in a reel containing some forty items.

Mr. Verry showed how films on modern readers could be wound on quickly without going out of focus, and outlined the preparations necessary before filming. A contents list should appear at the beginning and end of each film, and individual items could be separated and sign-posted by the use of numbered arrows. The reels themselves sometimes carried marks to show the approximate footage unwound. Short film runs need not be kept in reel form, as there were available several means of filing flat strips in short lengths.

Indexing material on film presented no special problems and micro-cards normally contained bibliographical particulars on the reverse. This applied also to microprints, which were 6 × 9 in. and contained 100 frames.

The Chairman expressed to Mr. Verry the thanks of the Panel for his readiness to answer questions raised in discussion.

D. PATENTS

Chairman : MR. J. S. P. PATON (Metropolitan-Vickers Electrical Co., Ltd.)

Recorder : MR. H. E. L. FREYTAG (British Boot, Shoe and Allied Trades Research Association)

All who registered for this Panel were present at the meeting. It became evident that the majority had selected the Panel because they desired guidance in methods of dealing with patents and of tracing them with the facilities at present available and a useful discussion and exchange of views took place.

The points dealt with fell under three headings : (a) (Elementary) patent law and procedure ; (b) Treatment of patents in special libraries of various sizes ; and (c) The facilities available for patent researches.

Informal answers were given to queries on patent law and some misconceptions cleared up. The questions came from those whose interest did not warrant any serious study of patent law. The following books were recommended :

MEINHARDT, P. *Inventions, patents and monopoly*. 2nd ed. 1950. Stevens & Sons, Ltd. 30s.

WHITE, T. A. Blanco. *Patents for inventions and the registration of industrial designs*. 1950. Stevens & Sons, Ltd., 45s.

or, for a really short account (79 pp.),

WHITE, T. A. Blanco. *Patents and registered designs*. 2nd ed. 1950. Stevens & Sons, Ltd., 4s.

On the question of treatment of patents in a special library, several members explained their practice. The number of patents collected per year varied from 100 to 6,000 ; methods varied accordingly. Some

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members subject-indexed patents according to the same system as used for their other technical information. One large collector used the Patent Office's classification, justifying it on the ground that the broadness of the scope of patents made considerable cross-referencing necessary. Where large numbers have to be dealt with each week, the labour and material involved in privately classifying the patents would be far greater than that required in carrying out searches using the existing classification key and abridgments. Detailed classification was certainly recommended in all cases where only relatively few patents of interest have to be dealt with per week. The amount of abstracting of patents also varied greatly ; often no abstracting was done, at least in the library or information department.

It was evident that those present would welcome a paper on the various methods of treating patents in an information department, particularly if the paper gave the indications and counter-indications (to use medical parlance) for these methods in terms of the size of the department, its intake of patents, the nature of its relationship with a patent department and the purpose of its patent activities (for instance, whether the main concern is with possible conflict with the company's own patents or processes, or whether the patents are used primarily as a source of information for staff).

Regarding patent searches, accounts were given of the methods applicable depending on the nature of the information given to the searcher. The use of the *Official Journal*, of the *Abridgments* and the register of patents in force were discussed and also the facilities available at the Patent Office and at some of the provincial centres. The dates up to which indexes and abridgments are available received special attention and here the notable advance made by the Patent Office in issuing the abridgments of patents accepted in the war and post-war periods was noted with gratification. Note was also made of the usefulness of the microfilm copy of the Press Mark Index which is now available from Aslib.

E. REVISION OF THE UNIVERSAL DECIMAL CLASSIFICATION

Chairman : MRS. MARGARET SPENCE (T. & H. Smith, Ltd.)

Recorder : MISS MARY DYKE (Royal Aircraft Establishment)

It was agreed to keep the discussion general, as individual problems could be more profitably dealt with by direct contact between the British Standards Institution and the user. Mr. G. A. Lloyd (British Standards Institution) was asked to outline the procedure for the introduction of new numbers and also to summarize the present position with regard to sections of the U.D.C. now under revision.

Mr. Lloyd emphasized the need for constructive help with revision and said that much time could be saved if an expert, when suggesting an amendment, could indicate a logical place for a subject and a tentative notation for its breakdown. Shortage of staff at the B.S.I. and extended

consideration by a Panel might hold up a proposal for a long time if this was not done at an early stage in the revision.

Mr. Lloyd stated that the second edition of the English abridgment of the U.D.C. (B.S.1000A) was due to be published soon. This would include all new *P.E. Notes* and would include a detailed index of about 10,000 to 15,000 entries. He said that he hoped to get the English edition of the whole of Division 6, Applied Sciences, issued by 1960.

In reply to Mr. L. Taylor (Rubery, Owen & Co., Ltd.), Mr. Lloyd said that items whose cancellation had been nationally endorsed, but not internationally accepted, could be printed in small type to indicate that their use was deprecated, in this country at least.

Miss G. E. Lockie (Ilford, Ltd.) pointed out the difficulty of suggesting places for new concepts without rearranging complete sections, and also of knowing what revision other people were doing. Mr. Lloyd replied that the cumulative *Extensions and Corrections to the U.D.C.* were indispensable for this purpose. The last number (No. 6) of the first series of this publication was due to be issued in the near future.

Miss E. Handlen (Department of the Secretary of State for Scotland) asked what the librarian should do when numbers were altered, when time would not allow revision of the index. Mr. Lloyd suggested that one could either ignore the new number, as the old number could not be used for anything else for ten years, or one could start using the new number from a given date and have two sequences of cards, the earlier of which would be used less and less as it became out of date. He also stated that if enough people opposed suggested alterations he could make objections in the F.I.D. Central Classification Committee.

Mr. Lloyd concluded the discussion by re-emphasizing the need for constructive proposals from experts in fields which required revision. He strongly urged users wishing to see new extensions incorporated to try to arrange personal discussions with him at British Standards House, where they could work out mutually satisfactory drafts for submission either to the appropriate B.S.I. panel (if any), or direct to the International Federation for Documentation at The Hague.

F. ASLIB CONFERENCES

Chairman: PROFESSOR R. S. HUTTON

Recorder: MR. E. N. SIMONS (Edgar Allen & Co., Ltd.)

The Chairman drew attention to the changes in structure of the conferences since the foundation of Aslib, and welcomed the revival of a session on Friday evening. He stressed the importance of having as many and as varied topics as possible, economizing time at their presentation by pre-printing papers. The main incentive and justification for attendances at the Conference was, in his opinion, the programme of papers and discussions. The social side would look after itself if the location and accommodation were satisfactory.

Mr. C. W. Cleverdon (College of Aeronautics) outlined the difficulties of the Conference Committee in ascertaining exactly what members

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required, and hoped that the discussion would produce some interesting and useful suggestions. A stimulating discussion then followed, in which the following suggestions were made.:

(a) That a statistical sample, say, 100 members of Aslib, should be chosen, and a detailed questionnaire sent to them asking for their views on why they attended conferences; why they did not attend conferences; what sort of conference they required; and any other detailed information the Committee thought useful. With this sample in their possession, it should then be possible for the Committee to ascertain what kind of conference was likely to attract and appeal to the greatest number of members.

(b) Some members considered that a non-residential conference held in London was not going to be successful. One member asked whether two conferences at intervals of six months might not be better than one large conference.

(c) Another member suggested that it might be advisable to appoint a small papers sub-committee to go through the papers submitted for the conference, and throw out those that were not up to standard or did not do more than repeat the A.B.C. of the librarian's job.

(d) That special steps should be taken at the start of the conference to orientate new members and visitors, to help them to meet other members and to appreciate the traditional character of the conferences.

G. STANDARDS AND SPECIFICATIONS

Owing to lack of support, this meeting did not take place.

H. PUNCHED CARDS

Chairman: MR. E. B. UVAROV (Courtaulds, Ltd.)

Recorder: DR. D. J. CAMPBELL (Institute of Cancer Research)

The Panel was made up of about twelve people, about half of whom had had experience in punched-card work (notably Dr. G. M. Dyson), while the other half knew little or nothing, and hoped to learn. Except for Dr. Dyson's contributions, the discussion was almost entirely confined to the subject of hand-sorted punched cards.

The Chairman suggested that those present who had used punched cards should briefly recount their experience. Mr. L. H. Miller (British Iron and Steel Research Association), Dr. D. J. Campbell (Institute of Cancer Research), Mr. R. G. Thorne (Royal Aircraft Establishment), Dr. G. M. Dyson, Mr. E. B. Uvarov (Courtaulds, Ltd.), and Miss M. F. Webb (Mullard, Ltd.) spoke.

Mr. Uvarov said that Courtaulds, Ltd., had used punched cards for research report abstracts and especially for the preparation of a confidential research bulletin which had to be classified according to recipients as well as by subjects. Another use (apart from personnel records) was for a record of renewals, subscriptions, etc., to journals which had been found to be very useful.

Dr. Dyson spoke of experimental work with I.B.M., Inc., on the indexing of data for chemical compounds. The difficulty with existing

Hollerith cards is lack of coding capacity, since they move through the sorters in the direction of the short axis of the card, so that coding for any one characteristic has to be confined to one column. By designing sorters to permit movement in the direction of the long axis, coding capacity is considerably increased. The new machines cannot be in production in less than two years.

Miss Webb said that she had used, while in a previous post, the Batten method of using punched cards, i.e. making each card represent a characteristic, while the holes represent the documents indexed (Batten, W. E., *Report of Proceedings of the 22nd Aslib Conference*, 1947, pp. 37-9). She expressed satisfaction with it and asked if anyone else had used it. Nobody present had. The view was expressed that the Batten method was severely limited in the number of documents indexable and forfeited the great advantage of having all information for one document on one card.

A general discussion followed. Mr. Thorne mentioned a development of the Batten method by Mortimer Taube (of Documentation, Inc.) for alphabetical indexing, in which each card represented an idea, e.g. 'microwaves', 'attenuation'.

Mr. A. H. Holloway (Ministry of Supply, T.P.A./T.I.B.) condemned the trial of Hollerith punched cards for indexing reports at the Atomic Energy Research Establishment, Harwell, which led to their rejection for this purpose (Ashthorpe, H. D., *Aslib Proceedings*, vol. 4, no. 2, 1952, pp. 101-4), and said that the trial was based on no proper study of the advantages and limitations of punched cards. There was general agreement with this.

Dr. Dyson emphasized the enormous difficulty of keeping large packs of punched cards verified and up-to-date. He stressed the need for a research laboratory to do fundamental work on coding. Mr. Thorne maintained that the chief need was for philosophical work on classification. The Chairman thought both were needed.

The Panel did not feel that it could indicate to Aslib any agreed ideas on the way in which punched cards could best be developed as a tool in library and documentation work. The library use of punched cards is still a relatively new field and the only general points on which the informed members of the Panel agreed were that no punched-card system is better than the classification and coding incorporated in it, and that it is desirable to learn to walk before trying to run.

J. CO-OPERATION BETWEEN VARIOUS KINDS OF LIBRARIES —ACTUALITIES AND POSSIBILITIES

(i) *Chairman* : MR. L. G. PATRICK (Aluminium Laboratories Limited)

Recorder : MISS E. E. PYMAN (Hendon Public Libraries)

Consideration was given to the following recommendations in the Vollans report :

'That, except in the London area, all university and special libraries located within the area of a Regional Library Bureau should become

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participant members of that Bureau ; their resources should be made available within the region, and the Regional Library Bureau should be the agency whereby, if necessary, applications should be forwarded to the National Central Library.' (R. F. Vollans. *Library co-operation in Great Britain ; report of a survey of the National Central Library and the Regional Library Bureaux*. 1952. p. 119.)

Mention was made of the many loans made directly between special libraries ; it was thought that should publications not be traced by such methods, time was likely to be saved by making a direct approach to the National Central Library rather than to a Regional Library Bureau. For this reason, among others, it was, after a full discussion, agreed to recommend :

That the Aslib Council should inform the Trustees of the National Central Library that in its view, while special libraries should be free to participate in regional library systems, they should retain the right to make application direct to the National Central Library in respect of inter-library loans.

Attention was then drawn to the outlier libraries of the National Central Library and the fact that many special libraries in the United Kingdom were not at present acting in this capacity. The matter was discussed at some length and it was agreed to recommend :

That the Aslib Council urge upon the Trustees of the National Central Library the great advantages which would result from a considerable and immediate expansion of the National Central Library's outlier library system and of its union catalogue of the more specialized libraries.

At the invitation of the Chairman, Mr. W. A. Southern (Abbott Laboratories, Waukegan, Illinois), representative of the Special Libraries Association at the conference, spoke on various aspects of library co-operation in the United States of America.

Among other matters discussed were the advisability, in certain instances, of purchasing publications rather than borrowing them and the report of the Library Association's Working Party on 'The co-operative provision of books, periodicals and related material' (*Library Association Record*, 1949, vol. 51, p. 383).

(ii) *Chairman* : MR. R. J. HOY (School of Oriental and African Studies, University of London)

Recorder : MR. V. D. FREEDLAND (British Hat and Allied Feltmakers Research Association)

When discussing the point, 'Is it worth while trying to develop schemes of co-operation such as that at Sheffield?', the successful experiences of the Manchester and District Special Librarians' Discussion Group were quoted, and mention was made of the 'West London' scheme.

The feasibility of a purely local scheme, such as those instanced, in areas where few special libraries existed was questioned, but it was

considered that Aslib might view the further development of such movements with interest and the Panel was of the opinion that such schemes were desirable.

In considering the usefulness to special libraries of the larger schemes of inter-library co-operation, such as those of the National Central Library and Regional Bureaux, it was contended that the demands made on the special libraries, by virtue of their particular nature, were far in excess of the demands they themselves made. This imposed an undue burden on low-staffed libraries and, coupled with the large subscriptions required to join in the Regional Bureaux scheme, made the usefulness of the N.C.L. and the Regional Bureaux a matter of some doubt. One member of the Panel said that the ability to obtain one or two much-wanted and difficult-to-locate publications, especially from abroad, might be well worth the disadvantages mentioned. It was suggested that a minimum subscription, with a further charge related to demands made by participating libraries, would be worth considering by the N.C.L. and Regional schemes. This, it was stated, was already being done experimentally by the S.W. Region.

The limiting of membership by the British National Book Centre was regarded by the Panel as a matter for regret and it was agreed to recommend that Aslib should investigate whether it would be possible so to adjust the scheme that further subscriptions could be accepted. A request was also made that steps should be taken to publicize the facilities of the B.N.B.C. as widely as possible.

Other matters considered were (i) the possibility of circulating a consolidated holdings list, such as those prepared by special subject or local groups ; and (ii) the possibility of filling gaps in periodical holdings by joint action within a group. No recommendations were made.

(iii) *Chairman* : MR. W. PEARSON (Ministry of Housing and Local Government)

Recorder : MISS G. M. TURNER (Science Museum Library)

It was agreed that *subject specialization schemes* are useful and that more of them should be encouraged, but it was hoped that this would not be at the expense of an adequate general library stock. It was felt that it would be premature to abandon the compilation of union catalogues in Regional Library Bureaux before the subject specialization schemes were better established. Specialization schemes should guard against developing subject stocks for which there is little use in the region.

It was agreed that *interchange schemes* similar to the Sheffield scheme should be encouraged where a public library service offered a suitable centre. This should be done more by suggestion from the Department of Scientific and Industrial Research and required the co-operation of the local Chamber of Commerce and a lead, if possible, from a prominent industrialist who is also a town councillor. Sheffield have found that fifteen miles is the maximum practicable distance from the centre. The advantage of this type of scheme was stressed in that it drew in the small

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special library which would not join Regional Library Bureaux, etc. The newly-formed scheme at Luton was outlined, but it was reported that a similar scheme at Slough eight years ago had failed.

Direct borrowing among special libraries was taking place as a natural development, but it was felt that the publication of the *Aslib Directory* might lead to excessive demands being made upon one specialist library.

The recommendation in the *Vollans Report* that special libraries should channel their requests through Regional Library Bureaux was briefly discussed. It was felt that this would be a retrograde step, as it would lead to even further delay in obtaining items on loan.

K. PROFESSIONAL TRAINING WITHIN THE FRAMEWORK OF THE LIBRARY ASSOCIATION EXAMINATIONS

Chairman : MR. B. I. PALMER (Library Association)

Recorder : MISS K. E. WATKINS (Patent Office Library)

The most important points made in the discussion were :

(1) That different training was necessary for those entering special library or information work with subject qualifications from that suitable for juniors in such libraries, who have neither subject nor library training.

(2) That a basic training, similar to that for public librarians but with proper alternatives, might be best for the latter group.

(3) That the present Library Association syllabus for the Registration examination might be suitable, with some modification, but that its present interpretation by tutors, and in some cases by examiners, is frequently inappropriate to the non-public librarian.

(4) That a way should be sought to avoid making the qualification rest on a single external examination, perhaps by taking into account work done in training courses.

L. PRUNING

Chairman : MR. B. AGARD EVANS (Ministry of Works)

Recorder : MISS M. DRYSDALE (Ministry of Works, Edinburgh)

Some twenty members discussed this thorny problem for an hour and a half. No votes were taken on the conclusions which emerged ; in all cases particular considerations might well outweigh any general recommendation. The subject was considered as applying to a small, special library.

Conclusions :

(1) Pruning is necessary for saving shelf space and to avoid diluting the current working stock.

(2) Pruning should be undertaken by the librarian himself or a senior experienced assistant.

(3) Normally, a stage of limbo is envisaged, where pruned material should rest for a space before being discarded, should no demand arise in, say, five years.

(4) Annual reference books may usually be discarded as they are superseded ; exceptions would be those whose contents would be of

historic importance to the organization, e.g. to give a 'Who-was-Who' answer. Many annuals might be of use to a department other than the library even if a year or two out of date ; but in no case should the out-of-date reference book be kept on the library shelves.

(5) Text-books should always be replaced by later editions. Thorough scrutiny of all stock should be made every five years. The life of a text-book varied with the subject, but few scientific or technical books over fifteen years old were of current value.

(6) Periodicals should be kept for a predetermined period, and then discarded. Any periodical intended for retention longer than three years should be bound. The practice of one library is to keep the bound volumes on the shelves for ten years, relegate to stack for a further ten years and then throw out, except for two or three which are earmarked for permanent retention.

(7) Abstract journals within the subject field of the organization should be permanently retained.

(8) Laboratory reports and similar material of a unique and original nature should not be destroyed without wide and careful consideration.

(9) Potential archival material such as (8) above, correspondence files, etc., should be the subject of guidance by Public Record Office, British Records Association or British Museum. Microfilming should be considered for space-saving, but the storage conditions and durability of the microfilm record are important factors.

Two principles were emphasized :

(A) If material is not useful it should be thrown out and (B) pruning involves a very real responsibility and should only be done at a high level.

M. THE INFORMATION OFFICER IN RELATION TO PROFESSIONAL SOCIETIES AND TRADE ASSOCIATIONS

Chairman : MR. J. E. L. FARRADANE (Tate & Lyle, Ltd., Research Laboratories)

Recorder : MISS C. M. POLLOCK (British Council)

The meeting opened with some talk about the meaning of the subject proposed for discussion, the feeling being that once it had been said that the information officer needed to be on good terms, preferably on terms of personal friendship, with as many as possible of the professional societies and trade associations that were of interest to him in his work little remained for discussion. Mr. Fairbairn, of I.C.I. (Dyestuffs Division), suggested that the Panel might find it more profitable to consider the subject from the opposite end, that is, the relation of the professional societies and trade associations to the Information Officer. From his description of the American Chemical Society which is divided into subject groups, one of which is a Literature Group, an interesting discussion developed on the possibility of the various professional societies in Britain being persuaded to take a more active interest in disseminating among their members information about the literature of the subject concerned and to take an active part in the education of their members

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so that they in their turn would be able to make use of the services of the Information Officer more intelligently.

It was concluded that the Education Committee of Aslib should be asked to study the example of the American Chemical Society to see if any useful ideas could be drawn from it.

In addition, it was felt that Aslib should pay increased attention to the idea that universities should train students (who were potential members of professional societies) in the use of libraries and the literature of their special subjects.

It was pointed out that the development of literature groups and of the information services within the professional societies would cost money. British societies were differently organized from the American ones. Many of them were more strictly limited by their insistence on professional qualifications and their membership was too small to make group division possible. They were trying to maintain high professional standards and were not interested in lending material to individuals or to firms outside the particular profession for which they existed.

Much discussion then took place on the desirability or possibility of persuading professional societies to lend material more freely to accredited representatives from industrial and other organizations. It was pointed out that the societies were losing income by refusing to lend officially to firms and research organizations against a set fee. The present practice was for a member of the society concerned to borrow on behalf of his firm unofficially and in his own private capacity. The Chairman re-emphasized the fact that many societies are more concerned to maintain professional standards than to make material available—even to their own members. There are difficulties—for example, financial difficulties—in extending a library loan service. The fear of loss of unduplicated material also plays a part in the policy of restriction. It was agreed, however, that, with the notable exception of the British Medical Association and the Royal Society of Medicine, which both hold much material not obtainable elsewhere, most professional societies do not hold a great deal that cannot be obtained from other libraries.

With regard to Trade Associations, it was agreed that the chief difficulty was the lack of a directory of these and it was hoped that the Department of Scientific and Industrial Research list, which promised to be an invaluable guide, would soon be ready.

N. THE ROYAL SOCIETY SCIENTIFIC INFORMATION CONFERENCE, 1948

Chairman : MR. C. W. HANSON (British Scientific Instrument Research Association)

Recorder : MRS. K. L. FARQUHAR (Royal Military College of Science)

Mr. Henrik Jones (Library Association) expressed the general feeling of members of the Panel when he submitted that some action and progress had certainly resulted from the Conference. He mentioned four spheres in which the Library Association was actively interested.

(i) The 'Kent Committee' had submitted a report to the Royal Society (through the Library Association) on the question of the rank and status of special librarians and information officers. This report had been widely circulated.

(ii) A Committee of the Universities and Research Section of the Library Association had similarly reported on the instruction and training in the use of bibliographies in university libraries.

(iii) The 'Baker Working Party' had produced an interim report on the co-operative provision of books and journals.

(iv) A Standing Working Party of the Library Association was at present engaged in studying recommendations arising out of the 1951 report of the Copyright Committee set up as a result of the Royal Society Conference.

(In the discussion on this question, it was generally agreed that the Royal Society's Fair Copying Declaration had had a very good effect, though the exclusion of the humanistic fields from its scope was deplored.)

Dr. Holmstrom (Unesco) gave some account of Unesco's part in furthering projects discussed at the Conference. An investigation into the methods and technique of union cataloguing had been carried out and work in the field of bibliographical references was in continual progress. In this connection he urged that, in view of the increasing practice of documentary reproduction, correct bibliographical references should be included on the first page of every article copied. (Mr. Hanson here referred to the recommendation made by him at the Conference that the *World List* abbreviations should be included by British publishers on every issue of their journals after the manner of *Philips' Technical Review*. It was agreed that Unesco be asked to press for this to be done.) Dr. Holmstrom reported also that Unesco had published a guide to the preparation of synopses, which included a recommendation that, in the case of a paper written in one of the lesser-known languages, the synopsis should also be given in one of the principal languages. Some 250 copies of a draft report on scientific and technical translations had, he said, been circulated by Unesco for comment by responsible organizations.

Mr. Hanson drew attention to the increase in the amount of the semi-published scientific literature which was not abstracted in the main abstracting journals. It was suggested that serious consideration ought to be given to increasing the accessibility of such literature. The general value of papers of this nature was, however, doubted by Mr. Baker (Ministry of Food), while other members of the Panel anticipated obstruction from industrial concerns, many of whose semi-published or unpublished papers were interim reports of a confidential nature for internal circulation only. It was felt that encouragement should be given to special libraries in fairly narrow fields to produce comprehensive lists of accessions which could be circulated to libraries in ancillary fields, such lists to embrace references to articles in journals and semi-published papers.

No specific recommendations for submission to Aslib Council were made.

ADMINISTRATION PROBLEMS OF A SPECIAL LIBRARY

A. THE SERVICE AND ITS STAFF

By L. T. OLDAKEE

Information Officer, Tube Investments, Ltd.

Summary

THE problems of an information service or special library discussed are those of staffing. The problems are greater because a solution in one organization is seldom applicable in another. This difficulty in arriving at a common solution arises not so much from the extremely varied activities of many information services, but rather from the infinitely varied nature of the organizations of which they form part. These variations are in several dimensions—in size, in subjects covered, in the organizational structure of the undertaking, and the status of the information officer within the organization itself *vis-à-vis* his administrative, technical, and commercial colleagues. These variations are so considerable, yet at the same time so indeterminate, that the information services themselves frequently defy comparison. Their staffing problems, unless considered individually, become major problems. For these reasons this paper attempts to survey only certain facets of the problem, and its scope has been restricted so as to exclude all but the larger industrial libraries. At the same time, it is hoped that the paper will have some bearing on related problems in other types of libraries.

Sir Reginald Stradling¹ at the 1946 Conference emphasized that information services must be active, and that 'the problem of an Intelligence Group in any organization is identical with that of the technical staff of that organization'. He saw the need for a trained staff who recognized the 'need for an active encouragement in the use of the facilities provided, and not a conscious or unconscious passive waiting for someone to come to the library'. It is necessary to recruit staff who will measure up against this yardstick of 'activity', who will take their place in the organizational structure and be contributing to its welfare the whole time. Always bearing in mind the differing requirements of the organization served, this contribution must be discriminative, selective, and urgent. To be able to give this service, the information officer, apart from subject or professional qualifications, needs personal qualities such as adaptability, loyalty, tactfulness, commercial-mindedness, versatility, and, above all, an ability to gain and hold the confidence of all members of the team of technical or other experts of which the information service is part. These indefinable and uncertificated attributes need to be superimposed upon the subject and professional qualifications conferred by university degrees

¹ Aslib, *Report of Proceedings . . . 21st Conference, 1946*, p. 27.

and library charters with which potential staff will frequently already be equipped. Another most important attribute is that of experience—not merely in the grammar of librarianship or as a subject specialist—but of the organization itself, its policy and its people. This kind of experience can only be acquired during the passage of time, yet there is the problem of choosing staff who will be capable of accelerating its rate of acquisition.

Finally, it seems clear that though the nature of the work is so varied and frequently so ill-defined there is really only one problem involved, although it may be many-sided. That problem is one of finding and retaining staff of the right calibre, with multitudinous attributes. The many-sided nature of the problem largely arises from the very great differences between one information service and another, and between one organization and another.

B. RELATIONS WITH MANAGEMENT

By N. L. R. SHERET, B.Sc., A.T.I.

Intelligence Officer, I.C.I., Ltd. (Plastics)

Summary

SPECIAL libraries within industry provide a service for industrial and commercial developments, this service being to :

- (1) Provide a collection of information derived from both published and confidential sources.
- (2) Arrange and index this information so that it is readily accessible at short notice.
- (3) Develop access to other relevant information held by other libraries or available through specialized channels.
- (4) Provide information thus available to the right people at the right time.

The problem which arises in relation to management is how to provide the maximum service, under (4), without undue expenditure against (1), (2) and (3).

The librarian should be responsible for the purchase, arrangement and maintenance of the library stock and the method for indexing and recording information available in the library and elsewhere. However, if a special library is to fulfil these functions economically, the librarian must have knowledge of possible projects and developments of the company, as well as knowledge on current interests. With this knowledge he can not only plan indices and the collection of necessary books, but may usefully extend his service to draw the attention of management and other executives to information bearing directly on the problems as they arise.

Accommodation for the ever-increasing collection of books, etc., working space for users of the library and adequate staffing are only likely to be forthcoming if the library provides the service expected. If it can be shown the library is such that it receives full and proper use,

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present-day management appreciates the importance of the service which a special library has to offer and seldom refuses the essentials of accommodation and staff to provide that service.

Management usually does not concern itself directly with the techniques employed by the library, but it is aware, either directly or through other users, of the quality of the service which the library provides and the library must therefore be able to see the problems which come before industrial management and library users from the point of view of the management and the user. If the library is able to do that, no significant administration problems between a special library and management should arise.

C. RELATIONS WITH THE USER

By F. A. TUBBS, Diploma in Literature (Lond.)

Librarian, St. Thomas's Hospital Medical School

Summary

A FEW subjects are basic to all librarianship, and a librarian's relations with the user is one of them. A library can stand or fall by the kind of relationship that exists between the librarian and his readers.

The special library may have a limited range of readers but a great diversity may exist within this range, and, whatever the type of reader or the subject, the manner of the librarian is important. It is not always timidity that prevents a man from stating in unambiguous terms what he desires to read. Sometimes he is engaged on some special line of research which he wishes to keep to himself in case he is anticipated by some rival in the field. This is where good relationships with his readers can help the librarian. If he has won over his readers he will be told the subject in confidence. This will often enable him to go straightway to the right sources. The librarian must make readers feel that he is trying to do all he can to assist. It is of practical importance that the librarian should talk with his readers and understand their outlook, as it can cut down time spent on queries. Many requests can be received and many problems settled over a cup of coffee in the staff common room or a communal meal.

One of the things that all technical libraries have suffered from in greater or lesser degree since the war has been the shortage of books. Many useful volumes are out of print, and cost is a dominant factor in other instances. There is no doubt that this shortage will, if the librarian is unprepared, vitiate good relations with the library user. It is not purely a library problem, but is common to other spheres of activity, and is partly a psychological problem. The reader must be made to feel that everything that can be done will be done. Here the Aslib Information Bureau and inter-library loan schemes can be invaluable.

It is sometimes surprising to librarians to hear a speech from some library user which is not devoted to library methods, but is concerned with such subjects as to whether smoking should be permitted in a library. Yet this is the kind of problem that is important in the librarian's

relations with the user. The atmosphere must be friendly enough to make a reader feel *always* welcome no matter how busy the librarian may be with readers.

The danger of too narrow a subject range in some special libraries has been noticed by many, and in the larger libraries this problem can be partly solved by a recreational library such as the Shaw Library at the London School of Economics.

Aslib has a part to play in the librarian-reader relationship. 'Now that it is less vital to be correct, it becomes more important to be acceptable' (Eliz. Bowen). To be acceptable in a technical sense involves standards. Aslib is the place where special librarians of all kinds meet on common ground. Membership of Aslib can be one of the acceptable standards.

Discussion

MR. R. O. MACKENNA (Librarian, University of Glasgow), who took the Chair for this Session, said that while yesterday's session had been concerned with training, to-day's had nothing to do with it. Administrative ability was largely innate and, while it could be fostered by education, this was of the academic type.

Administrative ability, however, was not immediately applicable with full effect in all situations. As Drs. van Dijk had said in his paper on 'The special library situation in the Netherlands', the 'climate' was all-important and special libraries were particularly susceptible to the climate imposed by the organization of which they were a part. In this session it was hoped to lay before the delegates some of the peculiarities of climate in special libraries.

MR. E. B. UVAROV (Courtaulds, Ltd.) said that there was one aspect of information work in industry which was inherent in all the three speakers' papers but which had not actually been mentioned. The dichotomy between the librarian and the user had been stressed by Mr. Tubbs. The industrial information user does not want an official or a clerk to act as a messenger, but a colleague whom he can consult on equal terms and with whom he can solve his problem.

MR. F. A. TUBBS, in replying to Mr. Uvarov, said that he had contrasted the librarian and the user as it seemed necessary to do so from the title of his paper. He was in complete agreement that the librarian must be friendly with his users and it was an advantage to meet and converse with them outside the library. A friendly atmosphere could be fostered over a cup of coffee and a cigarette.

MR. C. W. HANSON (British Scientific Instrument Research Association) spoke on the relationship between the information and library service and the management. Besides providing an efficient service, the information department must show an adult appreciation of the management's problems.

While the information department's job was to produce the best service possible within reasonable limits, this must not be achieved without reference to the effect of its demands on the organization as a whole.

Neither management nor information staff was in a position to be dogmatic about finance, accommodation or staffs because, at present, it was not possible to assess the value of the information or special library service. The cost, for example, of an abstract bulletin could be calculated, but not its value. No opinion based on facts could be given as to the optimum size of the information department in relation to the users. In dealing with the management, an appreciation of their over-all problems must be evident if the information department was to be accorded high status.

MR. B. AGARD EVANS (Ministry of Works Library) was glad to hear the late Sir Reginald Stradling referred to. Sir Reginald had always stressed the importance of a balanced team in the whole organization and in the library too.

While it was unreasonable to expect any one man to have all the qualifications recommended for an information officer, the ideal staff for an information department was one man who knew his job and performed it. This ideal was impossible, but a

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staff of more than six led to the limitation of duties and the inevitable lack of full co-operation. There was the danger that only low-level staff would be provided for the performance of low-level duties, whereas it was important that all the staff should be capable of helping inquirers when necessary. The management must understand the functions of the library. The service to be provided, the methods to be used and the staff and equipment needed must be made evident to the management, and it was well worth while to give regular statistics so that management should have a picture of the work load.

MR. J. E. L. FARRADANE (Tate & Lyle, Ltd.) agreed that it was important to gain the confidence of the management and in this respect the information officer must always act as a missionary. The idea must be put forward, both to the management and to the user, that they could obtain more from the information service than they were getting already.

In relation to the user, the information officer's job was to anticipate inquiries by reading in advance. It was important for the information officer to have sufficient technical knowledge for the user to accept him as of equal standing and approach him as an expert.

MR. B. M. HEADICAR (Institute of Public Administration) stressed the importance of the industrial library staff being treated as a team. There should be frequent consultations between all the members, and suggestions should be welcomed and credit given to their authors. Every member of staff could be loyal, enthusiastic and punctual.

MR. L. T. OLDAKER agreed with Mr. Uvarov and Mr. Farradane that the information officer must be on terms of equality with his technical users.

MR. N. L. R. SHERET pointed out that, for a company engaged in industry to survive, it must, over a reasonable period, make a profit or at least 'break even'. Clearly, therefore, the expenditure on information services had to be reviewed from time to time to make sure that it was not imposing too heavy a burden on the company.

MR. P. F. COLE (Anglo-Iranian Oil Co., Ltd) endorsed Mr. Sheret's remarks. Methods should be reviewed and new ones substituted for old. He did not think that there need be fear of interference from management experts. Provided the librarian gave full co-operation, they could often suggest new and economic methods.

MR. W. FREEMAN (David Brown Companies) spoke not as a librarian or information officer, but as a market research executive. His department was, however, an information department; it had to obtain information and write reports for the management. In his experience the chief difficulty in maintaining good relations with the management lay in their inability to explain to him what they really wanted. He had heard a discussion on the training of information officers, but would like to train the management to put its requirements explicitly.

MR. R. J. HOY (School of Oriental and African Studies) agreed with the last speaker. He asked whether in industrial libraries a knowledge of psychology was appreciated as a qualification.

MR. P. SPEAR (Rubery, Owen & Co., Ltd.) said that as Director of Research in his company he was responsible for interpreting to management the results of the work of the Research and Development Department, which included a technical library and information service responsible to the entire organization.

With regard to 'selling the library', he wished to point out that the best form of advertisement was by recommendation. For this reason then, they advertised within the organization that the library was a service to all employees of the group of companies. They tackled quite a number of short-term problems relating to the work of the organization so that departmental managers could have their attention drawn to the benefits of the Department by their own staff. Furthermore, some of the techniques of the public library should not be despised by the specialist library. A simple display of the covers of new books and the type-written list of new periodicals, etc., and a list of the main investigations in hand could all easily be displayed on a simple notice board at the cost of no more than a few minutes of an office boy's time. All this did help to make the user feel that he was welcomed in the library and that the function of the library was to serve him. This is extremely important. Even in a purely technical research set-up, it is by no means a *sine qua non* that all library users are familiar with

the enormous amount of help that a well-run library can give, and it is necessary tactfully to draw their attention to this. Mr. Spear felt very strongly that the whole arrangement of the library, its cataloguing, its classification, etc., should be designed so that it was easy to use by those not necessarily familiar with library and information techniques.

He was not happy with the term 'specialist library'. In his own particular Research and Development Department, investigations could cover such wide ranges as washing machines to tank transporters, lavatory flushing cisterns to machine tools and nuts and bolts to agricultural equipment. He felt that most specialist libraries covered very much wider fields than their particular branch of research might indicate. It merely depended on the amount of work done in the different fields of activities covered by the library in general. For example, even such a specialized subject as aerodynamics did, in point of fact, cover very many other fields of technology from machine tools and production engineering to the properties of pure elements as well as from pure mathematics to operational research. All specialist libraries use common techniques in carrying out their investigations and their problems in management and presentation covered much common ground.

Though the person in charge of the library or information section should be on the same seniority level as any other section-head, it should be remembered that when an investigation is taking place, the inquirer must always have the 'edge of responsibility' over the information man, since it was the inquirer who had to take the responsibility as to whether the information was valid and as to whether it should be used.

PHOTO-COPYING AND DUPLICATING PROCESSES

By H. R. VERRY, F.I.B.P., A.R.P.S.

H.M. Treasury, Organization and Methods Division

LET me first of all congratulate Aslib in bringing before its members these various photo-copying and duplicating processes. Book reviews and advertising literature serve a most useful purpose by introducing the machines to our notice, and in keeping us aware of the progress made in this field. The capabilities of any machine or process can, however, only be fully appreciated by actual demonstration which enables us to compare their possibilities with our own requirements.

One of the great contributions to scientific management made by Frederick Winslow Taylor, the father of scientific management in the U.S.A., was the idea that there is always one best way to perform a given task. He recognized that the best way could only be determined when full consideration had been given to all the conditions under which the operations had to be made.

This conception allowed Taylor to appreciate a most important consideration, that the one best way to perform a given task was not necessarily the best way to perform another task. Thus, the best way to produce 10,000 copies of a book was not the best way to produce a single article from a scientific journal.

This conception is of vital importance. Each of the machines you will see demonstrated is suitable for a particular purpose, or a limited set of applications. The process which will be to you the most suitable and useful will depend on what you want to produce, one or a thousand copies.

The choice of suitable apparatus is not always easy. The tremendous developments made in the post-war years have increased the difficulty in selecting the one process which is able to meet specific requirements. A few years ago, this selection was based on a simple code. A few copies were produced by the Photostat or reflex processes, since there was no alternative in the photo-copying field. Up to 100 copies the spirit duplicator was considered the ideal medium, and for quantities up to 2,000 copies or more the stencil duplicator was eminently satisfactory. The offset litho process was reserved for longer runs or half-tones, or where a paper with a writing surface was essential.

Modern developments have disturbed this long-standing, simple viewpoint. The use of diazo paper as a document-copying medium has considerably extended the economic limit possible by the document-copying processes. A recent examination indicated that from an acceptable original approximately fifty copies could be produced on diazo paper, by one of the newer processes, before it became more economical to type and duplicate.

For use with the spirit duplicator, new masters have been introduced which considerably extend the possible limit attainable by these processes.

At the other end of the scale, the introduction of the cheap paper plate for offset litho and the various chemicals for mixing with the ink have reduced both the initial cost and the long expensive 'make-ready' time, which previously made this process unsuitable for short runs. The introduction of cheap machines, requiring little operative skill, has finally made offset into a simple duplicating process.

It is inevitable that modern developments should have caused some overlapping between one process and another, but our long cherished dream of a perfect process, able to meet all our requirements with little cost, is still, and doubtless will remain, just wishful thinking.

The post-war years have witnessed some interesting developments in both photo-copying and duplicating methods. In the copying processes, the trend has been towards the creation of a translucent master and the production of a final copy by diazo.

The first machine of this type was the Retocée, made by Van der Grinton, of Holland, and now introduced into this country by Ilford, Ltd., under the name of Azoflex. The unique feature of this process is its use of diazo materials for both foil and print.

Later the Agfa Rapid, or Gevacopy type, was introduced. Using the reflex process, this method produced a negative which, when contacted with a transfer sheet, gave also a positive copy. The contact sheet could be on translucent material, thus providing a suitable master for use with diazo paper.

The introduction of the auto-positive type of paper, giving a direct positive which can be used also as an intermediate master, made it possible to add to the growing list of available master diazo processes. As the auto-positive is silver halide, its use in the office was facilitated by the semi-dry development method. Being of low sensitivity, the need for a darkened room was also obviated.

In contradiction to the many statements regarding the short life of diazo material, it should be emphasized that these are greatly exaggerated. An examination made into the keeping qualities of this material indicated that, stored in a file, it would be readable for twenty to thirty years at least. The new types now being introduced are considerably improved, and the makers have been giving serious attention to the consideration of these factors. The previous use of diazo paper as a cheap copying medium for the drawing office has restricted the development of good quality material but, to meet the requirements of document-copying, greatly improved paper is now being introduced by most manufacturers of repute. It should, however, also be noted that, whilst the introduction of diazo has extended the economic limit of the photo-copying processes, it does not allow them to compete with the duplicating methods, since they are normally designed for short runs from originals already in an acceptable form.

In the talks you are shortly to hear, you will be assisted in your choice of the process and the machine which will serve your purpose most

VERRY : PHOTO-COPYING AND DUPLICATING

speedily and economically. To help you in this choice, may I offer these few essentials which you should always bear in mind ?

- (i) How many copies will you require ?
- (ii) Is the original already in an acceptable form ?
- (iii) What size are your originals ?
- (iv) Do you require colour, or a writing surface, or a quality reproduction ?
- (v) Do your originals contain half-tone illustrations ?
- (vi) Is speed important ?
- (vii) Is cost important ?

I hope this very brief and inadequate introduction will assist you to make the selection according to your requirements.

Following the introduction by the Chairman, Mr. H. R. Verry, a series of talks with demonstrations were given by representatives of the following firms :

Ilford, Ltd. (Azoflex).
Addressograph-Multigraph, Ltd.
Photostat, Ltd.
Remington-Rand, Ltd. (Remflex).
Kaye's Rotaprint Agency, Ltd.
Ozalid Co., Ltd.

Notes on the apparatus shown by each of these firms will be found in the section dealing with the Exhibition on pp. 354-5.

AMERICAN INFORMATION IN GREAT BRITAIN

BY R. L. COLLISON, F.L.A.

Reference Librarian, Westminster Public Libraries

Shortened version

THE sources of American information in Britain are both greater and less than what might reasonably be expected in a country which has a common language link with the United States. In the first place, it is surprising what a number of specifically American agencies are available in Great Britain, and, in the second, it is astonishing what important sections of American information are either poorly represented or still unavailable here in spite of the efforts of many people from both countries during the present century.

The American agencies can be divided into two sections : official and unofficial. The first comprises those services provided by the American Government for the use of the British, and also those which it provides for the use of its own diplomatic and consular officials, but which are also able to give some types of information to the British. Chief among the former is the American Library, situate on the south side of Grosvenor Square not far from the American Embassy. This library, which was originally established in 1942 under the United States Office of War Information, and which operated until this year as an agency of the Department of State, has recently been rendered independent under a new body known as the United States Information Agency. It comprises a collection of some twenty thousand books, and current and bound files of some four hundred periodicals, in addition to a large number of maps and pamphlets and other fugitive material. There are also some two thousand recordings of American music and poetry and approximately four hundred scores of American music. The emphasis of the library collection is on current American Government and non-government publications in *all* subject fields, and there is a substantial collection of technical books, fiction with an American background, American history and children's books. One of the points of special interest to librarians is this library's fine collection of American bibliographies and indexes to American periodicals.

This library is intended principally as a source of information on America for the use of the British people, for officials and agencies, business, press, educational, scientific and cultural organizations who may wish to consult it, and it accepts personal, telephone and written enquiries free of charge. Books and pamphlets are lent freely. Copies of periodicals are only available for reference, but photostats of individual articles are provided free, though, owing to the heavy demands on this service, there is usually a delay of approximately one week. The staff consists of trained American and British librarians. One feature of this

COLLISON : AMERICAN INFORMATION IN BRITAIN

library service, which serves the whole of Britain, is that the Director can assist in the promotion of the exchange of publications between American *private* agencies and British agencies of all kinds. The Department of State's Publications Procurement Officer, who is an attaché of the American Embassy, provides additional help in this direction, since he can assist in the promotion of the exchange of publications between American *official* agencies—such as the Bureau of Standards and other parts of the Department of Commerce, the Department of Treasury, the Federal Reserve Board, and the three major Government libraries : the Library of Congress, the Department of Agriculture, and the Army Medical Library—and British agencies of all kinds. Lest, too, it should be thought that the provinces are somewhat neglected, it should be remembered that there are American consuls at Cardiff, Belfast, Edinburgh, Glasgow, Birmingham, Liverpool, Manchester, Newcastle-upon-Tyne, and Southampton, and that from these sources information on commercial subjects and on America in general can be freely obtained. Furthermore, a branch of the American Library (approximately one-fifth the size) is maintained at 18 Frederick Street, Edinburgh, under the direction of a trained British librarian.

In the American Embassy there is a number of specialist attachés, from some of whom information otherwise obtainable only with difficulty or not at all elsewhere is available. The widest source here is the library of the Commercial Attaché, which is well stocked with trade directories, year-books, guides, manuals, periodicals, and other sources of information on current industry and commerce in the United States, with special reference to marketing, imports and exports, and the regulations controlling these. There are also the Agricultural, Customs, Geographic¹ and Science Attachés, who are often able to help with information and Government publications—especially those unlisted items of the several agencies which are not issued by the United States Superintendent of Documents.

The News Service of the United States Information Agency is worthy of special mention : this service, which operates at 5 Grosvenor Square, provides summaries of speeches and news items of current interest, and its vast files of material covering the past four years or so is an ever-ready source of much valuable information on events and personalities, and acts as a welcome supplement to the meagre material available in reference works. This office maintains an open mailing list of these summaries of speeches and news items in various categories—*Daily Wireless Bulletin*, the *U.S.A. in Review* and *Labour News* (both fortnightly), and Special News Releases (which can be distinguished from the Bulletins by their red headlines) for the use of those organizations and individuals who are especially interested.

The Office of Naval Research of the United States has representatives in the American Embassy who are specialists in the various sciences—biological, physical, psychological, etc. The United States Navy sponsors

¹ Especially useful for maps.

a great deal of scientific research in American universities, and establishes contracts in these institutions for scientific investigation required by the Navy. The Office of Naval Research distributed over 18,000 documents during the past year to British and Continental scientists, private and official, these documents representing some of the research carried out under these contracts in America. Any person or organization requiring a copy of a specific scientific report prepared under this scheme should therefore apply direct to the Office of Naval Research at the American Embassy. No mailing list is maintained, distribution being decided in each individual case by the Office according to the needs of the applicants and the number of copies made available for Europe.

To turn to the unofficial agencies : chief among the press sources of American information is the London office of the *New York Times*, which maintains a file of the New York edition of the *Times* from 1911 to date, the last ten years being on microfilm. In the same building (the Adelphi) the New York *Herald-Tribune* has a six-month file of its European edition for consultation. The American Chamber of Commerce in London is not a public service, but its publication—the *Anglo-American Year Book*—is an invaluable source of information on the American and British agencies of most British and American commercial and industrial organizations. This is of great help, since information on special subjects may sometimes be forthcoming from the British offices of such large concerns as Monsanto Chemicals, General Motors, Du Pont de Nemours, McGraw-Hill, Remington Rand, and so on.

The English-Speaking Union maintains the Walter Hines Page Memorial Library, which is a valuable source of information on cultural subjects, and is also the headquarters of Books Across the Sea, which for some years now has been regularly exchanging with its American opposite number committee representative British and American books which otherwise might not be available as soon, if at all, on this side of the Atlantic. These books are housed in the various branches of the Westminster Public Libraries where, apart from a small reference collection at the South Audley Street branch, they have been incorporated in the general stock of those libraries. Mention should also be made of the Bureau of American Bibliography, established at the National Central Library in 1938 by a generous grant from the Rockefeller Foundation, which continues to serve as a source of information on American books and periodicals.

Nor must the considerable stocks of American material in all types of British libraries be forgotten : American books are as much in evidence here as British books are on the shelves of libraries in the United States. Nevertheless, searchers for specific items frequently look in vain. The types of material which are conspicuously lacking are periodicals, government publications and telephone directories. Even in the case of quite well-known American periodicals—such as *American Antiquity*—it has sometimes proved quicker to write direct to the United States for a copy rather than continue a rather uncertain search for it in this country. Similarly with United States Government publications : even the

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depository libraries (i.e. the British Museum, the London School of Economics, and the National Library of Ireland) are only receiving a fraction¹ of the total output from the Superintendent of Documents in Washington and very few of the documents issued independently by United States Government agencies. And there are some difficulties and delays reported concerning the purchase of American documents through H.M.S.O. Finally, there is no complete set of American telephone directories in this country. Good representative collections are maintained at the American Library, the Office of the Commercial Attaché, the American Chamber of Commerce, Westminster Central Reference Library, and most of the great provincial public reference libraries, but most of the new industrial and residential areas developing outside the great cities in America are not covered. The present position is that American information in this country is good but could be vastly improved by planning and co-operation along the lines of subject specialization.

¹ A glance at any issue of the Monthly Catalogue of United States Government Publications will show that the percentage of depository items when calculated against the total number of publications issued is remarkably small. In July, 1953, only 19 of the 199 documents and reports of the House of Representatives were declared depository items !

LIBRARY BULLETINS IN AMERICAN INDUSTRIAL LIBRARIES

BY WALTER A. SOUTHERN, B.A., M.A.L.S.

Librarian, Abbott Laboratories, Waukegan, Illinois

Shortened version

THE regular issuance of a library bulletin is one of the most important services offered by the American industrial library, for it is an excellent means of quickly disseminating newly published information.

Library bulletins are as varied in form and style as there are libraries which issue them. In general, there are three types of library bulletins :

(1) The index bulletin. Titles of significant articles in periodicals are listed and arranged by broad subject. Occasionally an annotation may be included when the title of the article is misleading, or when an important point in the article should be brought out. The library bulletin, *Periodical Index*, issued by the Abbott Laboratories Library, is an example of this simple, yet effective, type of bulletin.

(2) The abstract bulletin. All articles carry abstracts, and, in many cases, the abstracts may be one hundred or more words in length. The library bulletins issued by the Lilly Research Laboratories, the American Can Company and the Corn Products Refining Company are excellent examples of the abstract bulletin.

(3) The title-page index. Title pages of periodicals received are reproduced by photostat or other photographic means and a sufficient number of copies made to distribute to all interested persons. The title pages from all periodicals are then assembled with a distinctive cover and distributed. The Lederle Laboratories and the Upjohn Company both issue bulletins of this type, which is still not widely used in American industrial libraries. This type of bulletin has much merit. It is certainly the speediest type of bulletin to produce. In addition, the coverage of the bulletin is comprehensive, which most bulletins are not. There are, however, drawbacks to this type of bulletin. There is no subject index to the bulletin, unless one considers the periodical titles to be a guide to the subject. Periodicals generally carry sections headed Notes, Correspondence, or Abstracts. If no other information appears, these items may well be lost in the bulletin, as are many other articles whose titles give no indication of the contents of them. The most serious drawback to the title-page bulletin is that no permanent card index to the literature is produced as a by-product of the library bulletin. If an industrial library is to give effective service it is almost imperative that the library should index the current literature to supplement the printed indexing and abstracting services such as *Biological Abstracts*.

Lederle Laboratories issues its library bulletin each morning. It would be difficult to better this service. In these days of cost consciousness it is

SOUTHERN : AMERICAN INDUSTRIAL LIBRARY BULLETINS

likely that the title-page bulletin will become increasingly popular, and when publishers issue multiple copies of title pages at the time the periodical is published, the biggest step in the production of the title-page bulletin will be eliminated.

There are a number of abstract bulletins being produced in the United States to-day which are the co-operative efforts of American industrial libraries. Two bulletins are issued by American industrial pharmaceutical libraries. *Unlisted Drugs* is a monthly index of pharmaceutical specialities, along with complete information on them, which have not yet appeared in the standard lists of drug preparations. The *Cornip List* is a monthly list of non-serial publications issued by pharmaceutical and chemical companies in the United States. The *Metals Review*, issued by the American Society for Metals, and *Corrosion Abstracts*, issued by the National Association of Corrosion Engineers, are both based on abstracts prepared and supplied by industrial libraries.

The American Petroleum Institute Abstracting Service expects to begin operation by 1st January, 1954. The service is the result of some five years of study and planning by research management and industrial librarians.

The A.P.I. approved a sum of \$50,000 in the fall of 1952 for the establishment of the service. The money now has been raised from the industry, a manager has been hired, and the service is being organized. It will operate with its own staff of translators, abstractors, clerical help, etc. It will be co-operative only in the sense that costs will be shared among the subscribing companies. The initial subscription rate has been set at \$3,000, based on a loose estimate of twenty participating companies.

Initially the service will cover only material of interest to the refining field of the industry, though it will probably be broadened later to include production, marketing, transportation, etc. The service will begin by attempting to provide 'basic' coverage only, by covering some 100 journals of interest to the refining field. A weekly abstract bulletin will be published with the abstracts grouped under broad subject headings.

Provision has been made to furnish the participating companies with the means of producing 'search cards' from the abstracts. The bulletin will be produced by off-set and duplicate cheap paper masters will be furnished libraries, from which they can run cards.

Discussion

The Chairman, Mr. JOHN L. NOLAN (Director of Library Services, American Library, London), threw open the meeting for members to ask questions or make any points that they wished to raise.

DR. BONSER said that he had been asked by Mr. Wilson to bring up the matter which had been raised in a letter by Miss Jacobs, who had now left for the United States. Miss Jacobs had complained of the fact that certain U.S. technical periodicals had widely differing subscription rates for subscribers in the United States and in the United Kingdom, and journals whose subscriptions ranged from \$2 to \$5 in the United States cost between \$15 and \$25 in the United Kingdom. In almost all cases, the journals concerned were published by McGraw-Hill. Miss Jacobs thought that this might be a suitable question for Aslib to take up, especially as McGraw-Hill had

announced that they were sending their representatives to England shortly to straighten out any little details in their services which might not be quite satisfactory.

Dr. Bonser had checked, with the help of Mr. Pledge, of the Science Library, and the facts were as Miss Jacobs had stated them, the only difference was that in some cases it was possible to subscribe to a journal for three years at the rate of two. He, therefore, decided to move the following resolution:

The members of Aslib assembled at their Annual Conference, 1953, (i) deplore the extreme discrepancy between the prices charged for McGraw-Hill periodicals in the United States of America and in the United Kingdom; (ii) heartily support any measures taken by H.M.S.O. to secure a reduction in their cost to customers in the United Kingdom; and (iii) ask Aslib Council to take independent action for the same purpose.

The resolution was seconded by Mr. E. R. YESCOMBE (Northern Polytechnic and National College of Rubber Technology) and was agreed to without opposition.

PROFESSOR R. S. HUTTON recalled that at an Aslib meeting held in 1941 in honour of Mr. Archibald MacLeish, who was then Librarian of Congress, it had been suggested that he should try to devise some scheme to enable British librarians to purchase American Government publications over the counter in London, corresponding to the British Library of Information established in New York in 1920. Following this meeting, the American Library had been set up, but the original problem remained unsolved. Later H.M.S.O. took over the responsibility for American Government publications in this country, but the stocks they held were meagre, and it was usually necessary to order a publication and wait for it to be sent from America. Could something be done to enable H.M.S.O. to give a better service?

Another indication of our needs arose from a visit in 1948 of the Managing Director of McGraw-Hill, at which he had issued a list of the 205 most important American technical and commercial journals. Professor Hutton had made a check to see how far these periodicals were available in leading public libraries in the U.K. and this had shown that outside London they were very poorly represented; for example, there were only three technical and commercial U.S.A. periodicals in the Liverpool Public Library despite the great importance of Liverpool in American trade.

MR. NOLAN replied that the position with regard to periodicals had improved recently. The question of Government publications was more difficult. He and Dr. Picon would consult with the Director and also with the Library Association to see what could be done to improve the position.

MR. H. FREYTAG (British Boot, Shoe and Allied Trades Research Association) drew the attention of members to the advantages of having a deposit account with the Superintendent of Documents; one merely obtained, from a sufficiently large Post Office, an international money order for the amount required (in his case it was £3), and sent it direct to the Superintendent of Documents, Government Printing Office, Washington 25, D.C., and then one could order U.S. Government publications and receive them without delay. The process of obtaining the international money order involved filling up a form demanding the exact purpose of the remittance; however, a statement that it was required to pay for scientific and technical literature items of small value individually was accepted.

MR. J. E. L. FARRADANE (Tate & Lyle, Ltd.) asked if the American Library could give any help in obtaining technical publicity literature from American firms. In a number of cases when he had written for such literature which he had seen mentioned in the technical Press, he had received no reply from the American manufacturer, presumably because they thought there was no chance of making any sale.

MR. NOLAN replied that it might be possible for the American Library to give help in cases of this sort and that he would be glad to try.

ACQUISITION OF REPORTS

BY A. H. HOLLOWAY

Ministry of Supply, T.P.A.3

Aeronautics Group: Symposium on 'Handling report material', No. 1

Introduction

INFORMATION, to be of any practical use, must get into the hands of the people who want it, and if all information were openly published the question of getting it into those hands would be a matter solely for the owner of the hands. In fact a considerable proportion of existing information is not published, and the acquisition of this proportion is a matter of co-operation between the holder and the user.

Some information is in the hands of one single person, and unless he takes steps to disseminate it, it is likely to die with him as the methods of solution of a number of problems died with some eighteenth-century mathematicians. At one stage forward the holder may communicate his information by private letter to his personal friends, and it is very difficult to break into this 'old boy network' even when its existence is known. The present problem, however, arises when a limited number of copies of the information have been produced in the form of a report, and these copies have been sent to the people who are known to have a need for their contents.

If you are one of these people, there is obviously no problem, as the report comes to you without any action on your part. If, on the other hand, you are not, then you must first learn of the existence of the report and then set about procuring a copy, unless you have access to a bureau of some sort which will do both jobs for you at once.

Learning of the existence of reports

There are two ways of learning of the existence of a report: the easy one in which you ask what reports there are on a subject, or by an author, or from a source, and the more usual one in which you find this information for yourself. In the easy way you only need to know who to ask, and the answer is somebody who maintains indexes and will tell you what you want to know. This second condition is necessary because there are restrictions on the circulation of many papers which may prevent you from receiving the report you want, and if you cannot have the report there is little satisfaction in knowing that it exists or who has a copy. These restrictions are not only those which arise from security gradings, but also other restrictions applied by the agency which produced the report as a condition of its release to those who receive copies. When you enquire about a report, therefore, it is wise to say why you want it, and to give that reason in some detail, because the higher the security grading or the greater the restrictions applied to the report, the more detailed and convincing must be your 'need to know' before you get it.

There are of course other ways of learning of the existence of a report. Most reports contain bibliographies which include the relevant papers consulted by the authors and once you have made a start on the report literature on a subject you will rapidly accumulate a collection of references by this means. There are also a number of subject bibliographies, either in the form of card indexes or as written lists ; these are most useful if you can get to see them, but be cautious with them, particularly about dates. A written list cannot include anything issued after it was compiled and card indexes are not always maintained, particularly if the indexer's interest or job changes. Another way is the word of mouth information that 'someone at such a place wrote a report on that subject about three years ago'. This sounds at first to be just what you want and all that remains is to ask an information bureau to identify the report and get you a copy : the information bureau after a period of sweat and tears may have to tell you that the fact is that there is a section in a report five years old on another subject which appears to be what you have in mind, so when you receive any oral information, extract as much data as you can while you have the opportunity, and check whatever you can possibly check. The last method that need be mentioned here is the scanning of issue lists and accession lists ; some sources prepare and issue lists of all the reports they produce, and it is always possible to ask for such lists ; however, when they exist they may well not be available to all enquirers, so it is well to keep in mind the usefulness of the habit of saying why you want anything you ask for. Most libraries and information bureaux prepare accession lists, and they are supplied to those who have sufficient need for them.

Selection of reports

When you have studied the lists of reports which exist on the subject you are concerned with, you may find that there are only one or two to be had, but you may also find that there are hundreds, although you only have need or time to consult a few ; it then becomes necessary to do some selecting.

One obvious basis for selection is quality, but this is the most difficult to assess without the actual document. Abstracts are nearly always silent on the point and in any case an assessment from one point of view may be quite invalid from another, so that other criteria must normally be used. One of the best is the content of relevant information, and here you may have a good deal of help. Index cards and some lists give bibliographic data and abstracts will tell you the main topics dealt with, so that if you want to know, say, why most tortoiseshell cats are females you will at least be able to select some sources which have several pages on sex-linked characteristics and to eliminate several of them which deal only with poultry. Abstracts will also enable you to avoid papers which are confined to airy generalizations if what you want is down-to-earth detail. Authors, too, give an indication of the probable value of reports. Some are known to be experts on particular subjects and in their own fields their work may be regarded as authoritative.

HOLLOWAY : ACQUISITION OF REPORTS

So far you may still have an inconveniently large number of reports to choose from and need other criteria to thin down the field. In such a case it is a good idea to consider how easy it is going to be to obtain the various papers. It is small comfort to know that a report contains the very information you need if you must have it to-morrow and the only copies are in America, or if the report is classified 'Secret' (which it may be although your information has no security value), and you cannot establish your claim to a security classified report. Consequently it is as well to start with those papers you are confident will be procurable. Age is a point which has already been mentioned : you will find no mention of an effect in a paper issued the day before it was discovered, but many old reports deal with fundamental issues which have since been neglected because they are (often wrongly) supposed to be irrelevant or universally familiar. Again you should consider whether there is likely to be a copy of a report, say, five years old still available.

One thing to remember is possible bias. A society for promoting the use of helicopters is likely to be very coy about the noise they make, but many organizations do issue reports which deal objectively with all topics, favourable or unfavourable to their objects.

Acquisition

When you know that a report exists and have decided that it is the one you want you are well on the way to obtaining a copy, provided that you know who to ask for it. This proviso is an important one, particularly since many of the sources of knowledge of the report's existence do not give this necessary clue, and the running to earth of a report whose title, author and date of issue are known may still be a difficult job.

If you know the laboratory at which your report was written, this may still not be the right answer as there is often, as in the Ministry of Supply, a central agency which is the only source of some reports and a useful source of many more. If you keep a record of reports which you do not hold but which look as if they may be useful, do not forget where to obtain them if this information is available, and do not neglect any opportunity of finding it if you do not already have it.

When you learn of a report from an accession list, you should not always suppose that the agency which produced the list is the best one to ask for the report. The first thing, of course, is to study and follow the instructions which probably appear in the list ; if services are restricted to members of the producing agency and you are not one of them, then obviously you must look elsewhere. If you are a member do not forget to comply with the conditions : give the fullest particulars of what you want, do not be too proud to say why you want it or where you saw a reference to it, and do not ask for a copy to keep if the list says it is only available on loan.

Of course you may be able to go to a bureau and ask for any reports they have on a particular subject. Once again do not forget to say why you want the information and to specify it as accurately as possible. To return to the example already used, do not ask for everything about cats

if what you really want is to know why most tortoiseshell cats are females—if you do, you will not only give the bureau a lot of unnecessary trouble and obtain a small mountain of irrelevant information, but you will very likely find that you have not got the crucial piece of information, because it is to be found in papers on genetics.

Another point to remember in asking for reports which you discover in accession lists is to give the agency you are honouring with your request all relevant information. If the list gives an accession number or some other private means of identification, quote it—it is the easiest means of identification for that particular agency, but do not stop there: you may have copied a figure wrongly or some other trifling error may produce some utterly irrelevant report. The people who deal with your request can easily enough ignore what they do not need, but they cannot read your thoughts or supply details they have not been given.

In general, if you value your good name, do not ask several people simultaneously for the same report. There may of course be circumstances which force you to do so, and in this case tell each of them what you are doing.

For those reports which are priced do not forget to send the cost or to include postage, and be sure that your remittance is payable to the correct person or agency and is in the right form.

When you have got your report be careful to acknowledge receiving it if you are asked to do so and to remember any conditions that are laid down—if it is restricted to certain people let everyone who sees it be sure of the fact; if it is to be returned by a stated date, take steps to see that you will be able to do so, or if for any reason you need an extension of the date, say so and why you think it necessary. When you do return a document, too, let it be securely packed, sent to the right address, and see that it is accompanied by a paper saying who you are, what is in the parcel and quoting a reference your correspondent will recognize. This not only enables the lender to keep his records clear and so may save you from being involved in a dispute about the return of the documents, but is also a great help if a parcel comes to pieces in the post—an unfortunately frequent occurrence.

As a last word I should like to quote Eugene Jackson of N.A.C.A.:

‘Another principle to bear in mind is that your agency does not exist so that you can acquire documents, but rather your acquisitions activity exists to acquire documents for your research organization.’

Some sources of reports

It is probably presumptuous to mention any agencies as being useful sources of reports, as many more must be left out than can be included, and the great majority of them are specialized to a greater or lesser degree, but if some of these notes are of use to one or two readers, then some good will be done.

H.M.S.O. The Stationery Office issue an enormous range of reports, and it is wise never to forget them. They stock papers by some other

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organizations (such as UNESCO) and will obtain others if asked, though the procedure may prove to be cumbrous. A monthly list is produced of all their issues, and is supplemented by others, including a daily list.

The American equivalent of H.M.S.O. is the *Government Printing Office*, which publishes a monthly catalogue of issues (annual subscriptions \$3). Not all the papers it lists are available to anyone : some are only printed for official use and others are distributed at the discretion of the issuing office, but all priced documents can be obtained.

One of the useful American sources is the *Office of Technical Services* of the Department of Commerce, which issues bibliographies of technical reports of which it is prepared to sell reproductions. The subscription to the Bibliographies is \$5 and they list (and give abstracts of) reports on all subjects from all sources collected under broad subject headings ; as reproductions are offered to all comers the reports of course contain no security classified information. Their material is available from D.S.I.R. (TIDU).

Ministry of Supply. The largest organization in this country for research and development work is the Ministry of Supply. Unfortunately for the seeker of information its work is intended primarily for the supply of the armed forces of the Crown and the Ministry is therefore not anxious to inform potential enemies of the results of that work, so that most of the reports are available only to those who are working for the Ministry or have some other legitimate cause to receive them. However, whatever can be made available is released and there are two Bureaux to which you can apply : the Central Radio Bureau on electronic subjects and the Technical Information Bureau on others (apart from Atomic Energy). Both these are at First Avenue House, High Holborn, W.C.1, and if you are writing to them be quite explicit as to what you want and remember to say why you want it (and why you should have it).

Atomic Energy. For obvious reasons very few of the reports produced at Harwell can be released, but some of them are available, and are sold by H.M.S.O. (see their lists for details). There are also a number of reports released by the American Atomic Energy Commission, and for these the best places to apply are the Sheffield Public Library and D.S.I.R. (TIDU).

D.S.I.R. The Department of Scientific and Industrial Research exists to sponsor research and development work and to see that the results are published. It maintains in its Technical Information and Documents Unit the nearest British equivalent to the American Office of Technical Services, and can supply copies of their reports and of some other American issues. TIDU also holds BIOS and similar reports on German industry and many others. It issues the *Bibliography of Industrial Drying* (27s. 6d.) and the *Chemical Index* (Microfilm, 10 guineas) and

organizes a co-operative scheme for technical translations from Russian.

There is a free loan service for most of its material and photo-copies can be supplied at 1s. per page full size and 3d. per page microfilm. Visitors are welcomed at Cunard Building, 15 Regent Street, S.W.1.

Conclusion

The acquisition of reports, like any other part of the business of the librarian or information officer, is difficult or easy very much as the individual makes it. The wise man will go about his business systematically and will always try to make it easy for his sources of information to deal with his requests ; he will keep notes of the peculiarities and rules of his sources and will play up to them ; he will make his requests reasonable. He will then find that he obtains a surprisingly large proportion of what he asks for and that his correspondents will go out of their way to help him.

The author wishes to thank the Chief Scientist, Ministry of Supply, for permission to publish this paper.

ACCESSIONING AND CATALOGUING OF REPORTS

BY A. R. CAMERON

A. V. Roe & Co., Ltd.

Aeronautics Group: Symposium on 'Handling report material', No. 2

Introduction

THERE is in my library a report with a most engaging title—*On the nature and conditioning of least work equations in structures*. I must add that I am far from being sure what it is all about, but anything on the nature of least work is attractive, and particularly so in the documentation of reports. Aeronautical libraries are mostly small, with staffs varying possibly from one to three, and the handling of reports is only one of their functions. Moreover the number of requests for reports may be small when compared with other enquiries. On this basis there is no doubt whatever that the time and effort spent in organizing this material is quite out of proportion.

Clearly then the methods of dealing with reports must be as simple as can be devised. In two respects the aeronautical librarian's lot is greatly eased and may even be thought to be enviable. I think it is safe to say that aircraft manufacturers are contractors to the government, and while this involves them in a jungle of regulations (which the librarian may have to maintain) it does ensure a beneficial and copious supply of technical information relevant to the work in hand. (Later on in this paper I shall give some rough figures relating to this point.) The other piece of good fortune is the index cards enclosed with many of these reports.

Before we get immersed in the problems of accessioning and cataloguing I think it is necessary to define the purpose of the work involved. To my mind this has been done quite admirably by 'Clover Hill' writing on filing of reports in the *Aeronautical Group News Letter* (1). He makes five points to which I add two.

His are :

- (a) What reports are there in the library on a certain subject ?
- (b) What reports are there in the library by a certain author ?
- (c) What reports are there in the library issued by a certain organization or a particular series ?
- (d) Has the library a certain report bearing a particular reference number ?
- (e) The vaguest request of all when nothing is known except that, for instance, the enquirer remembered seeing it about two years ago, but cannot recollect exact subject or anything else.

My two points are :

- (f) What is the security grading of a certain report ?
and
- (g) What is the history of the report—i.e., who has seen it ?

Accessioning

There is nothing, it will be noticed, about those statistics so beloved of issuers of questionnaires. Do we really need to know the number of reports received each year? This is a question which will have to be answered by each individual librarian, remembering that statistics are utilitarian—the basis of action: they are not aesthetic objects of contemplation. What I am now discussing is, of course, the accession register. Do we need it? The point is controversial. On that very ground we could say quite brusquely that it is not essential. But accession registers, like the poor, are not so easily disposed of. They pop up in unexpected forms so that we may not always recognize them when we see them.

If we are to answer point (d) 'Has the library a certain report bearing a particular source reference number?' we shall have to compile lists of reports in series. It will be prudent to record in these lists the date of receipt of each report. Point (c) 'What reports are there in the library issued by a particular organization or a particular series?' has now also been answered. Whether we make these records in a book or on cards the result is something very like an accession register. The question whether we are to make these records in some sort of books or on cards has quite suddenly become a pressing one. I shall later argue on behalf of books for which I think there is now a very strong case.

A minor but possibly troublesome matter remains. It is a general characteristic of reports that they are issued in series. There are, however, seeming exceptions—the waifs and strays. These odd reports, which everyone collects, appear not to belong to any series or, at any rate, not to any series one is likely to acquire. Samples of these are the reports of other firms. These are best dealt with by giving them accession numbers and recording the issuing body in the author index.

Bulletins

It may seem odd to mention bulletins at this stage but there are sound reasons for doing so. It has already been mentioned that the Ministry keeps its contractors supplied with selected data. Much of this is on short term loan. Other reports may contain information on current problems. Technicians, therefore, must be told about all these reports as soon as possible. It is here of course that 'security' raises its ugly head and introduces complications. An Aslib conference is not a suitable place at which to discuss security. I will just say that note is taken of the security grading of documents and their treatment is accordingly varied. This is point (f) to which I do not propose to return.

If the bulletins can contain summaries of the reports so much the better. I believe it is worth while to make great efforts to achieve this. If at all possible, the reports in the bulletin should be bibliographically classified however roughly. This assists in their classification should they not be in the library. In other words classification can be tackled as opportunity permits.

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The author index

The author index presents little mental difficulty. The entries should be as complete as possible and should include all authors where there is multiple authorship. Christian names should be in full when known. Issuing bodies are authors in the library sense. This is point (b).

Classification

This is the attempt to answer point (c) 'What reports are there in the library on a certain subject ?'

It is usually assumed that there are two contending systems—the U.D.C. and the NACA.* Both are in such a state of upheaval that it is almost impossible to assess their merits. However, Eugene B. Jackson (2) has produced some figures which show that the NACA system requires about half as many digits as U.D.C. Bearing in mind our principle of least work the NACA on this score is undoubtedly preferable. R. C. Wright (3) has stated that the Royal Aircraft Establishment has been issuing its own (UDC) cards since the end of 1952 and in the case of Aerodynamics Department reports NACA numbers have appeared as well. My general impression (there is not sufficient statistical evidence yet) is that these have needed fewer NACA headings than U.D.C.

I do not regard this as being by any means conclusive, yet I cannot allow this occasion to pass without quoting from an article entitled 'Indexing of Aerodynamic Data. Visit to N.L.L. Holland' (4) which appeared in the *Group News Letter*.

'A member of the scientific staff', it says, 'was actually discovered using the subject index—Central Classification of Aeronautical Literature. This system was started at the end of the war by the Dutch, who found they could not make the U.D.C. workable.' So far as I know this remarkable statement has not caused any comment whatever.

I would criticize both systems on account of their use of numbers. I am in favour of a letter system. At one time index cards were written by hand and a number system presented no special difficulties—rather the reverse. But now that index cards are being typed the situation is quite different. A trained typist is very little, if any, better than a one-finger tapper on the numerical keys. The result is that these numerical systems make excessive demands on concentration and slow down production for the skill of the typist is not used. With the letter code a further advantage is that groups of letters tend to form monosyllabic 'words' which quickly become associated with specific ideas and are thus an additional guard against errors.

Assuming that the U.D.C. is retained the code might be :

0	1	2	3	4	5	6	7	8	9
a	b	c	d	e	f	g	h	i	j

533.6.011.6 would become iff.l.abb.1
629.135.24 „ „ ley.bfi.cg

This would enable shelf filing to continue in the present order.

* National Advisory Committee for Aeronautics, U.S.A.

Of course there is no necessary reason why we should confine ourselves to ten letters. The NACA (1952) (2) has twelve main sections. The use of a single letter for the last three sections, 10, 11 and 12, would at once be clearer and save one symbol.

That hybrid, a mixed figure and letter code, surely the ultimate horror, must be resisted at all costs.

The remaining points

I have now attempted to answer all the points except (e) and (g).

- (e) 'The vaguest request of all.' This is largely a psychological problem, so no doubt there is a system which can be applied. What this system is I do not know, but I do know that the correct answer is quite frequently found. Some knowledge of the enquirer and the contents of the library are obvious prerequisites.
- (g) 'History of the report.'—I find it very useful to keep a record of borrowers of each report. In the case of a report received on loan someone who has seen it may be able to assess its value for a prospective borrower. Is it worth borrowing again? Has a report which may be of special interest to a certain person been sent to him? One wants to know this oneself and so sometimes does high authority.

Are we wasting our time?

I have made a quick survey of the loan records of some hundreds of reports. As I have said earlier the Ministry send us selected reports. These are in the main unpublished and confidential documents. They are of many kinds, from several sources and very varied in quantity, but I am lumping them all together. This makes the figures less accurate than they might be but one does not wish to attract the attention of M.I.5. The figures for some published reports to which we subscribe are given in greater detail. For the purpose of this paragraph they are the more interesting since index cards are not enclosed with them.

On looking through the records of 500 British reports (Aeronautical Research Council Reports and Memoranda vulgarly known as R. & Ms.) and dividing them into lots of 100 I find that the percentage of reports borrowed at least once is :

1st	100	—	64%
2nd	100	—	50%
3rd	100	—	44%
4th	100	—	45%
5th	100	—	37%

Similarly with 300 American NACA reports the results are :

1st	100	—	39%
2nd	100	—	33%
3rd	100	—	25%
42% of all these reports have been borrowed.			

Two thoughts strike out at once if these figures have any meaning.

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They are the appalling and increasing waste of time and energy involved in the documentation of these reports. Of course if one were to take into account the number of times reports have been borrowed the value of these series would be seen to be much enhanced, but that is another matter. In the case of the NACA reports the waste of time and energy seems particularly regrettable since they are classified at source. It is merely that this information is not published.

For the reasons already stated the figures for unpublished documents cannot be considered very reliable. However, 300 records examined show that 214 of these have been borrowed, which is a percentage of 71. As many of these reports carry index cards the central cataloguers may therefore feel encouraged to continue the good work.

A good many conclusions may be drawn from these figures. I would say that they show the desirability for extending the central indexing to published material. The small percentage used by any one purchaser does not of course reflect in any way on the quality of the reports but merely indicates the limits of the interests of that particular purchaser.

Books or cards

I come at last to the medium of recording. Shall we have loose-leaf books or cards? I have suggested that there is a strong case for books. 'Clover Hill' (1) in the article on filing from which I have previously quoted, says he uses a Twin-lock loose-leaf binder of foolscap size for his numerical lists of reports, asserting that '20-25 reports can be listed on each page, and (that) they are very much quicker to consult than cards.'

It is unfortunate that in advocating books I have to forgo the support of this powerful ally and seriously qualify though not quite demolish his case. There are few series of reports of which the library will have a complete run. Reports are not received in numerical order and it is not uncommon for them to have addenda with the suffix 'a', 'b', etc., after the number. One very important series of reports is numbered by a date code. It is therefore quite impossible to tell whether one has, or has not, a consecutive series.

I am very sorry about this for the advantage claimed by 'Clover Hill' is very real, but its application is limited.

The real case for some sort of loose-leaf book arises from the inclusion of summaries on the index cards. This extra matter has created difficulties. There is the difficulty of legibility and the difficulty of layout and our card indexes begin to resemble Falstaff's army with classification and report numbers almost where you will. But I have never met a technician who did not welcome these summaries. It would be a retrograde step to omit them or unduly to curtail them. Yet there are not wanting librarians, who ought to know better, who are clamouring for less information on the cards so that they can be locked. No one, I suggest, but a librarian could conceive such an intolerable obstacle with which to obstruct reading. But if we do not have locked cards let us take warning from the dreadful fate which overtook the lamented M. Fulgence Tapir, who was

completely immersed in his index cards. 'Suddenly a terrible spurt of index cards arose and enveloped him in a gigantic whirlpool. During the space of a second I could see in the gulf the shining skull and little fat hands . . . then it closed up and the deluge kept on pouring over what was silence and immobility.' (5).

So it's books. One report per page, with spacious layout and adequate summary, on both sides of the page if necessary.

We have been warned !

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FILING AND STORAGE OF REPORTS

By P. S. WALKINS, A.L.A.

British European Airways

Aeronautics Group : Symposium on 'Handling report material', No. 3

IN introducing this paper I am assuming that you appreciate what a report is, the sources and acquisition thereof and also that you understand there are no short cuts in dealing with the problems raised. The previous speakers will have 'put you wise' on these points. Therefore this paper is probably the easiest of the four. This is because we need discuss only ways and means of having our material available so that it can be put into our readers' hands with as little difficulty, quickly and as completely as possible. Incidentally the conclusions at which I arrive are based on my own experience with the methods used at the B.E.A. Head Office library.

If we agree at the start that libraries are to provide material for their users, then that material should be so arranged that the service can be prompt and effective. Readers require reports ; the date of publication, size, title, author or name of the issuing organization are often of only secondary importance.

If for instance you are asked for a report on the trials of certain equipment for diamond-cutting, the mere fact that X. Y. Smith has had a foolscap report issued by the I.D.B. Corporation during January, 1953, numbered R. 12345 is incidental, providing that the content of the report meets the need of your enquirer. The content of the report is the main consideration, and that should govern its filing and storage. Therefore the stock of the library should be arranged in systematic order. Some librarians arrange their journals in classified order, why cannot we classify reports and arrange them side by side with other material that deals with the same subject ? If the needs of the library's users are not of prime importance then reports can be filed by any method. Even in a library that allowed no direct access to the shelves the subject arrangement of its stock would be the logical method.

Let us consider some possible methods of arrangement :

SIZE : this method might save some space. But the librarian in answering a subject enquiry would have a great deal of bother in collecting material for his reader. Also against this expediency (it is hardly a 'method') the librarian must insist on obtaining enough space for his stock and its growth.

STOCK NUMBER : or Accession Number, this amounts to filing by time, shelf-space would be needed only at one end of the sequence. Also an accession number might be simpler to use than either a class mark or the report series number. Against this the user cannot go straight to the shelves for his material but must first consult a catalogue, for material on a subject would be spread around the library.

Accession number filing would simply mean that the latest additions were either nearest to the door or farthest away from it. This strongly reminds me of the arrangement in early religious houses where the orthodox books were on the right, and the unorthodox ones (bound in black, the colour of the damned !) were on the left.

CHRONOLOGICAL : this method raises its own problems. Does one file by date of publication, or date of authorship ? And it still does not help with answering the subject request.

AUTHOR : this method also scatters subject material around the library. Besides which, corporate authorship creates cataloguing difficulties. Why transfer those problems to the shelves ?

GEOGRAPHICAL : this method also does not help with a subject request.

SERIES : keeping reports in their series order is much favoured. It is in effect a refinement of a geographical arrangement. A complete run of series may look impressive, but there is no advantage where you have but one or two items. The subject approach is not helped.

Even users of this system admit to difficulties of deciding responsible agencies and of avoiding confusion over report numbers between series. A good authority-file of corporate authors is needed and meticulous cross-referencing of contributing agencies and associated report numbers. Besides which, how often are you asked for all of the reports issued by so-and-so organization ? And who would want to read through all of the R.A.E. Aero reports in numerical order ? Or, the Command papers ?

Other methods include arrangement by language, and alphabetically by subject. But these have no appearance of being panaceas. To take a simple example : if you have reports on Suppressors, Ignition, Spark-plugs, Booster coils and Starting vibrators they will be separated by having your stock arranged in alphabetical order, though their subject-content may well overlap. Also there are difficulties with terminology ; you may handle reports on Convertors, but another organization may call a similar component an Inverter.

S. Herner, in his paper (see refs.), has the following :

'Many report libraries do not seem to have a clear cut philosophy of their own, and they either do not choose to be guided by, or are unaware of, the time tested philosophy of library science.

This lack of a clear cut philosophy and this unfamiliarity with the fundamentals of bibliographic organization is what apparently induces the establishment to the use of myriad and weird numbering and coding schemes for filing reports. These systems are extremely diverse but most of them have in common the fact that they ignore the fundamental precept of organizing knowledge according to its place in the subject spectrum.'

He goes on to show that filing reports by codes and numbers can result in the premature burial of extremely valuable sources of technical

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information. Expediency is usually the excuse for using them but it is forgotten that what is expedient to-day is not always expedient to-morrow, and a hodge-podge develops. Expediency is usually not a system at all. The point that Herner stresses is that 'storage should maximize usefulness'.

To maximize usefulness of your book-stock you arrange it in classified order. Why not do the same with reports ? It has been said that 'Classification is the foundation of librarianship' we might do well to remember that.

Arrangement by CLASSIFICATION is applicable to all types of library material. It is logical. It allows for browsing, and the examination of reports on related subjects. This is because classification brings together related subjects. Librarians and enquirers find the order of subjects useful. *The return of items to their relative positions on the shelves is facilitated.* The class mark serves as a shorthand sign to the contents of the reports. And for the librarian, if not the inquirer, it helps with the issue recording, helps with stock surveys, helps with the compilation of bibliographies, catalogues, book-lists and literature searches. Thus in all it is the great time-saver for the library staff and the library user.

No catalogue entry can ever really replace the sight of the items it describes. That is probably one fundamental reason why catalogues are not used as much as they should be. The inquirer is usually content to rely on the assistant's memory.

The subject request is best met by showing the reader the items that are actually in at that moment. Then supplement this by reference to the catalogue. Our procedures should be geared to deal efficiently with the subject request which forms over half of our inquiries.

Against classified arrangements critics say that they interpose another number between the reader and the answer to his request. Also that reports from a series are scattered round the library. So they should be ; the subject is more important than the series.

True, a classification scheme would have to be detailed to house the majority of reports which we handle. But that is no hardship. And since the usual order of subject break-down is from the general to the particular, there will be a place for that occasionally occurring report, the 'general' one.

Now, from the filing of reports to the physical storage thereof :

OPEN SHELVES : an unthinkable method of storage. Even if the shelves had a grille it would not be convenient or easy to uncover a whole caseful of reports in order to abstract the one required.

CARDBOARD AND TAPE : this method is used by one very large library for its collection of pamphlet material. Two pieces of cardboard are threaded with tape. Between the cardboard are placed the pamphlets or reports which bear the same classification mark. The tapes are drawn taut and 'asserted with a simple bow'. The home-made book can then

be placed on the shelf in classified order and the item required can be easily taken out when required.

But this method has disadvantages.

BINDING : I do not agree with the binding of mixed reports on the same subject into one volume. I have two main reasons :

(1) a volume is issued, and then a request is received for another report that happens to be in the same volume.

(2) Some reports outlive the usefulness of others. This means that parts of the volume could well be discarded.

For the same reasons I would not bind reports, in a series, into 'series' volumes. 5,000 reports may well be bound into 420 books, that occupy 70 ft. of shelving, but my reasons still hold good.

One Transport library uses this method. It looks nice. But it does send up the cost of postage.

VERTICAL FILES : four-drawer filing cabinets are expensive and wasteful of space. Presumably, reports would stand in two rows the whole depth of the drawers. A half-full drawer would need some form of packing, or the reports would soon start to sag and eventually get out of order on the bottom of the drawer. This method has, though, two advantages :

(1) reports could be stored in classified order.

(2) a lock complies with certain Security regulations.

FILING BOXES : the ordinary Eastlight type of foolscap box-file makes a good receptacle for reports and kindred pamphlet material.

Reports have the class-mark and accession number put on the cover or top page. Then all reports bearing the same class mark are placed in an Eastlight box-file, large reports, folios, etc., being folded. The class mark is put on the back of the box. Thus books and boxes can be arranged in classified order and placed on the shelves.

Our bookcases have glass doors and locks. Overall measurements are 7 ft. 4 in. by 6 ft. by 1 ft., which gives us 30 ft. of shelving per case. With 11 files per shelf and 15 reports to a file, a case will hold 1,650 reports.

According to Security regulations it would appear that we need only steel bars on these bookcases in order to comply with the Ministry rules. *In actual fact* we house highly graded reports in a steel safe, and of course the library is never left unattended.

Now to this other connotation of the word 'classification'. Security classification is, to the librarian, both a credit and a curse, or at least a nuisance, because it enforces separate sequences.

The British Government Department Regulations concerning classified documents are themselves 'Confidential'. This may well cause a gust of Chestertonian laughter, but it is true ! After some correspondence I managed to obtain a 'suitable version' for use in our library. This version, of course, is itself also marked 'Confidential'. But I hope that I

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shall not be telling you anything unauthorized if I give you a hint of these regulations :

“Secret” reports should be kept in locked steel cabinets with steel bars and locks. “Confidential” and “Restricted” reports may be kept in locked cupboards. And should the quantity of reports warrant it, a separate room must be provided either kept locked or under constant supervision.’

At all costs security must be respected. Since the majority of our libraries are open access to the staffs of our organizations, and since security grading exists, then ‘parallel sequences’ of stock are forced upon us. Note that this has nothing to do with ‘broken order’. It simply means that you separate all reports marked with a security grading and store them in the same order as the main library classification. A closed access library might well enjoy the luxury of having all of its stock in one order. Up-grading, or down-grading, of a report simply causes the report to be moved from one sequence to another.

Now let us consider the reduction of stock. All libraries that are used tend to grow in size, and the slightest change in the interests of an organization will have corresponding repercussions on the stock. Reduction in the physical size of a report library is a question that will eventually arise in the most lavishly planned premises. The ideal state of having the whole stock to hand is seldom possible.

If the policy is to retain all material received then use of store room, or stack, will ease the situation. It has the advantage of being cheap. If the policy is not to retain material then, provided that no security regulations are broken, reports can be destroyed, or passed on to another library which might need them. One day there may be a central agency that will receive these unwanted items and store them.

In an effort to reduce size, it might be thought simple to limit the range of interests of your libraries. But this leads to potential gaps in fringe subjects and may result in the lack of vital information when needed.

Chronological limitation is also not a safe rule to apply. Very often we find an early report is in demand, years after it was issued. This frequently happens in Aeronautics, where one would be excused for thinking that only the latest reports are of any use.

Geographical limitation is again no safe rule, for developments are never confined to any country or set of countries in any subject.

From the foregoing it is obvious that discarding or withdrawing must be done with care.

So we come to the Micro group ; films and cards.

Micro cards occupy one-thirty-fifth of the space occupied by the actual reports themselves, 35 mm. film only slightly more, and 15. mm. film one-seventieth. This sounds very nice, but . . .

Equipment is expensive. Many small libraries could not afford gadgetry for producing a single copy in micro-media, neither the massive, clumsy floor-space-consuming micro-readers nor the equipment for producing full sized reports from a micro-copy. In passing, let me say that if any of

my audience can convert me on this point I am willing to be converted ! There are, moreover, objections to the prolonged use of micro-readers. Physical disadvantages, not only from eye-strain, but also from fresh problems of storage, frequently occur.

J. Orne (see refs.) seems to recommend photographing everything and reproducing it for readers as they require it. But persons who know more about the use of micro-material than I, agree that if a report is used once a year it is still not worth putting into microfilm or card form. And how many of our libraries have archive material enough to warrant dealing with it in this way ? Unless again, some central agency could do it for us at a very cheap rate, saving space by this method is not economic. Moreover, the use of micro-material makes other sequences essential. Cards should not be sorted into the actual catalogue. They would have to be filed in classified order in separate cabinets.

Microfilm strips could be stored in manilla envelopes. A complete roll of film is awkward to handle when only a few frames are needed for reference. Otherwise a small box must accommodate each role. Or a cabinet in which the shelves have a number of pegs around which the roll is placed.

To summarize, reports should be filed in library classified order, and stored in boxes on shelves kept in that order. Due regard should be taken of security graded material, but the above principle holds good. And the same is true with micro-material.

Finally, I wish to thank the C.P. & I.O. of B.E.A. for permission to quote local practices.

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EXPLOITING REPORT LITERATURE

By R. C. WRIGHT, A.L.A.

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Aeronautics Group: Symposium on 'Handling report material', No. 4

EXPLOITATION is a word which has only one meaning, but its connotation may not be quite the same for the trades union leader as it is for the tactician. To the librarian it has for some years meant getting the utmost value from a book stock limited by a rigid book fund. Having spent valuable staff time and money in selecting the book and putting it through ordering, accessioning, classification and cataloguing processes, he wants it to reach as many as possible of those able to profit from it. To achieve this, he indulges in publicity of various sorts—library bulletins and accessions lists, specially prepared booklists on individual subjects, displays of new books and of material of topical interest, and so on.

The whole philosophy underlying modern training in librarianship is in fact to present to the reader as much as possible of the information he wants, and to do so with a minimum of regulation and restriction. This, you will no doubt observe, is a glimpse of the obvious, but in considering the handling of report material we should not ignore the methods and the motives of conventional librarianship.

Report literature is fast superseding the scientific periodical and the journal of the learned society as the most important medium of scientific communication, particularly in those fields of science concerned with national defence. Thousands of reports are appearing every year from government research establishments, industrial research organizations, firms under government contracts, and universities. A considerable proportion of these are of very little value: on the other hand, access to one such report may avoid the duplication of a piece of research which has already been done, and this can save some hundreds or even thousands of pounds.

What, then, are our main difficulties in getting the utmost value from this wealth of information?

Firstly, the origin of the material itself. Research reports commonly outline the results of research on specific projects, and therefore come from a multitude of sources. They are not published in the normally accepted sense of the word, few copies are prepared, and distribution is controlled by the originator, by a sponsoring agency (such as the American Office of Scientific Research and Development) or by a Government Department. Their existence is not normally advertised in trade literature or in published lists of new books, unless they appear in one of the few series which are on sale to the public. (By the time they reach this stage, the information in them is usually of historic rather than current interest.)

Secondly, the form of the material. A research report may be of almost any size and shape and may be prepared by any process ranging from a spirit duplicator to letterpress, with illustrations ranging from dylines

to half-tones. Research work must be reported as quickly as possible, sacrificing where necessary quality of writing and even adequacy of analysis, but having spent so much time and money on the research it seems wasteful to produce a report in insufficient quantity or of poor format. It is equally wasteful, having prepared the report with comparative speed, not to distribute it with equal speed.

Mention of distribution brings us to our third and greatest problem. I refer of course to security : not so much to commercial security, partly because it has not troubled me personally and partly because it seems only reasonable for a firm to retain for its own use information gained at considerable expense with a view to 'one-upness' on its competitors.

Military security is a much more serious problem, particularly in the aeronautical field, because a very considerable proportion of the report literature is subject to it. For the benefit of those who are not familiar with it (those who are should skip the next two paragraphs), I will indicate broadly how military security affects exploitation.

British and U.S. authorities have agreed on five basic security grades (they call them 'classifications' but naturally no librarian would do so !) which are, in ascending order, Unclassified, Restricted, Confidential, Secret and Top Secret. In addition to these basic grades there are certain special terms such as 'Restricted Data' sometimes used in addition to the appropriate security grade by the Atomic Energy Commission, 'Unclassified-Cleared for publication' used by the Atomic Energy Research Establishment and the words 'Security Information' which appear on U.S. reports bearing any of the top four grades. There are also certain qualifying terms used with the basic grades and limiting their circulation still further, but if I described these this paper would itself be either censored or security graded. Similarly the significance of the basic grades in terms of physical security control is to be found only in the Service security manuals, which are themselves 'classified'. (Ref. 1 however is useful in this respect.) Suffice it to say that each rise in security grading implies increased precautions as regards custody and transmission, so that we finish up in a welter of double envelopes, registered mail, hand-to-hand messengers and receipts at each stage of transmission. When a document is upgraded or downgraded, all recipients have to be informed accordingly, and the records amended.

This is not all. The same precautions which apply to a graded document are applicable also to catalogue cards, abstracts, accession lists and correspondence relating to the document, in fact to anything which mentions it by title or suggests its content. Add to this the personal security clearance of individuals and the application of the 'need to know' principle, and you understand why it is that distributing agencies and libraries handling this type of material are so expensive in staff.

National security is not achieved simply by locking up documents (known enemy agents have been meticulous in their observation of security requirements) : they must not only be kept out of enemy hands but must fall without restriction into the hands of our own appropriate research workers. This is indeed a challenge to the reports librarian :

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it is also a challenge to the individual scientist, who must participate actively in the library effort if he is to receive the information he wants.

An example of such participation exists in the Royal Aircraft Establishment, where each major research department has a scientist acting as information officer. It is his duty to see that the information needs of his Department are met either by the Main Library or by the Departmental Library which he supervises. He assists in book selection and handles information requests arising in or referred to his Department. Incoming reports are received first in the Library, where they are recorded and indexed. They are then routed according to subject, to the appropriate Departmental Information Officer, who is in a position to know exactly which sections or individuals will need to see them. The D.I.O. also classifies (U.D.C.) the report if special subject knowledge is required to do so. Over 1,300 scientists are served in this way, the efforts of the Departmental Information Officers being co-ordinated by the Senior Information Officer who is a full-time member of the library staff and who maintains a 'field of interest register' of the current special interests of each Department. This scheme works well only because each Information Officer is a practising scientist familiar with the literature of his subject and with the current projects of his Department.

Whereas in a general library any new addition may have an almost unlimited potential readership, an incoming report is often of possible interest only to three or four specialists. In spite of this, many report libraries prepare some sort of publication intended (*a*) to provide evidence that the report exists, (*b*) to help a reader decide whether he needs to see it and (*c*) to serve as reference material. It is of course necessary to issue separate lists for security graded material and to limit the distribution of such lists, which again makes the effort expensive in terms of staff time per item per individual informed.

Other libraries, such as the Royal Aircraft Establishment, whose report accessions come mainly from two or three distributing agencies, circulate the lists prepared by these agencies. This has the advantage of telling people not only which reports have been received in the library but also which reports are available in this country. These library and agency announcements may take the form of accession lists, abstract bulletins, cards in bulletin or sheet form, sheets of cards inserted in the report itself and individual cards with or without abstracts. Of these, the card forms with abstracts are probably the most useful, particularly when they are prepared by the issuing or distributing agency and supplied in quantities sufficient to provide for library indexing and also for announcements to departments, sections and individuals. United States Army, Navy and Air Force authorities, who produce over 100,000 reports a year, have led the field in this activity and Eugene Jackson has described (Ref. 2) how announcement bulletins and bibliographies are prepared photographically from card abstracts, with a consequent saving in typing effort.

In this country the Department of Scientific and Industrial Research issues 8 in. by 5 in. abstract cards for the reports of its research stations

and the Ministry of Supply (TPA₃/Technical Information Bureau) is considering the issue of abstract cards with (or ahead of) the reports which it distributes. This should avoid considerable duplication of effort.

There is a need here, and in report production and handling generally; for the use of more modern business systems and methods. The Americans, advised by the Library of Congress and other Washington libraries, have shown us how to use I.B.M. proportional space typing and simplified offset printing to produce several records or publications from a single typing operation. They have also issued many thousands of reports on 5 in. by 3 in. microcards. These, with their complementary abstract cards, are largely self-indexing and go a long way towards solving the reports storage problem which threatens to become acute. There is need also for reduction in the amount of clerical effort necessary in the handling of report literature: in spite of security considerations much duplication of writing and typing could be avoided by the use of multiple stationery, particularly for loan records, delivery notes, receipts and overdue notices. This would enable the library staff to give quicker and more personal service to the reader. 'The consumer of research report services exhibits essentially the same reactions as those of other readers. He likes new ideas, personal attention, and an opportunity to express his opinion. Similarly, he usually dislikes maintaining files, receiving material he does not want, and waiting for long periods of time without explanation or reply.' (Robert S. Bray, Ref. 3.)

In the field of report literature organization there is room for considerable research to develop new and more effective techniques of dissemination and to get the maximum return for the millions of pounds spent annually in scientific research and development. The Documentation Committee of the Advisory Group for Aeronautical Research and Development, NATO, has been quick to recognize this and to initiate programmes for standardization of document size and format, abstract cards in reports and improvements in subject classification systems. It is to be hoped that member nations will give full support to these programmes.

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WHY B.I.S.R.A. HAS ADOPTED THE AMERICAN SOCIETY FOR METALS/SPECIAL LIBRARIES ASSOCIATION (ASM/SLA) METALLURGICAL LITERATURE CLASSIFICATION

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Engineering Group : Symposium on 'Snags I have struck'.

Introduction

AT six-weekly intervals The British Iron and Steel Research Association issues a Report List containing abstracts of and references to its research reports. One list may contain between 25 and 50 abstracts. A classification system for these references is very necessary for the Association's Information Section. The system that has been used for the past seven years consists of a subject and author index and has grown and been amended so often that it has gradually become more unworkable as the diversity of our research work has increased.

Search for an alternative system

For about three and a half years we have therefore been looking for a suitable system to replace it and, briefly, our efforts can be summarized as follows :

(1) An attempt was made to produce our own tailor-made system. This showed promise when the basic iron- and steel-making processes were considered but we could not visualize a scheme to cover such wide fields as mechanical working, plant engineering, physics, chemistry and metallurgy.

(2) We examined several other systems but all were rejected until we found the ASM/SLA Classification.

It may be asked why we did not adopt the U.D.C. We had three strong reasons for not using it : (a). It covers all branches of knowledge, therefore, metallurgical references are scattered through it. (b). It provides the branches and twigs which compose the tree of knowledge but as a Research Association we wish to know much more about the fibres which make up the twigs. (c). It imposes an artificial boundary between pure and applied science. This is perhaps the greatest objection because the fields of work of a Research Association, which links industry with fundamental science, are very close to, and in many cases cross, this ill-defined boundary.

Some of the other systems which were considered were rejected not because in our opinion they were bad, but because they did not fill our specification which is outlined below.

Attributes of our 'ideal' system

- (i) Iron and steel subjects must be dealt with in detail.
- (ii) The system must allow of considerable expansion.
- (iii) A minimum of cross-reference cards should be required.

(iv) Classifying reports, preparation and sorting of cards should be most economical in equipment and labour.

(v) Chances of 'losing' a reference must be very small.

It was the limitations imposed by (iv) which caused us to reject many systems which might otherwise have been acceptable.

The ASM/SLA system

This is an outgrowth of the hand-punched card system of metallurgical literature classification developed by Guy and Geisler of the G.E.C., in the U.S.A.

Referring to the attributes which we wished any new system to possess, we found that the ASM/SLA classification possesses the first because it provides a logical and practical breakdown of the entire field of metallurgy, both ferrous and non-ferrous. It affords a guide for an edge-punched card system of filing and the method of punching is such that there is ample scope for expansion (see *ii*), several cross-references may be punched on a card (see *iii*). As the cards are sorted by a hand-held needle it does not matter what order cards are in, hence the chances of losing a card are very small (see *v*). The equipment needed to operate the system consists of the punched cards, a hand punch, several needles for sorting, filing boxes for the cards and a work book. All this equipment has been obtained in this country except the work book. Preparation of cards is therefore simple, and as the classification is not difficult to learn, attribute (*iv*) has also been found.

The only imponderable at present is the time taken to sort cards. As we are only beginning to use the system and are still preparing the new cards we cannot make a definite observation on this point but, so far, indications are favourable.

The edge-punched card, with its double row of holes round the periphery, provides a large area in the centre on which much information concerning a report may be handwritten, typed or affixed. References may be classified under one or more of five aspects, viz. (1) Processes. (2) Properties. (3) Materials. (4) Authors and (5) Common Variables. All are incorporated on the 4 edges of the card. Processes and Properties are combined into one index and these with the Materials index form the basic sections of the system.

Processes and Properties Index

Twenty main headings, known as First Orders, are provided and include one for Allied Fields so that references, which are not primarily metallurgical, e.g. mathematics, engineering and statistics, but which are closely related to metallurgical science, can be coded. The first order headings are sub-divided into sub-headings known as Second Orders and these are sub-divided into Third Orders which are themselves again divided into Fourth Orders. The Committee which devised the system has, however, not named any fourth orders so that the user can make his own to meet his particular needs. The same is true of many third and second orders. Space is provided for nine spare first orders ; this enables

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the user to make new first orders if he wishes or he can raise a subject in a lower order to a first order if his work involves special interest in that subject, e.g. there are fifteen fourth orders to a third order reference but by raising a third order to a first order, 6,480 sub-divisions are made available.

The Materials Index

Materials are classified in four groups: (a) common elements frequently used in metallurgical work, (b) broad groups covering similar elements, such as the alkali metals and halogens, (c) special groups, such as heat or corrosion resisting materials and (d) ferrous groups which supply a detailed breakdown of special value to users who are interested in ferrous metallurgy. Here, too, space is provided for raising a low order subject to a spare first order place.

There are alternative forms of this index and the user may choose the one he prefers.

The Common Variables Index

This is a miscellaneous collection of information including factors which modify the basic sections of the classification. This index may also be used in one of several alternative ways and is designed to cover such variables as equipment and influencing factors, which modify the Processes and Properties Index ; castings, metal forms and defects which modify the Materials Index and a miscellany of other data which may include the type of literature, geographical and language references, etc.

The Author Index

A novel Author Index is provided which can only be applied to punched cards. An analysis of the frequency of occurrence of the first three letters of the names of some thousands of metallurgical authors revealed that the five vowels and the letters H and L formed about 90 per cent of the second letters and indicated the importance of knowing the third letter. Provision has therefore been made for the first three letters of an author's name to be punched as a direct index. Whilst the first and third letters are punched in holes provided for the whole alphabet, the second letter can be punched in one of only six holes viz. one for each of the five vowels and one for 'other letters'.

This system enables more than one author's name to be punched on a card and again eliminates the need for cross-reference cards.

Sorting

This is a simple operation in which a batch of cards are aligned and the needle is pushed through the required hole. After fanning the cards out and raising the needle, wanted cards drop out and are ready for the next needling operation if one is necessary. Several needles may of course be used simultaneously to reduce the number of operations.

The Work Book

A loose leaf book is needed as a key to the classification and the work book provided consists of sheets which index all the references given by

the ASM/SLA Committee and also indicate spaces which are available for the expansion of the system.

Limitations of the system

The perfect literature classification does not and may never exist ; the ASM/SLA classification has a number of limitations and these were considered before the system was adopted. The main limitations are given below and have been accepted by our Information Section.

The maximum number of cards which can be handled comfortably is about 10,000. This is not a serious handicap to B.I.S.R.A. as the Iron and Steel Institute provides the Association's members with library services and abstracts world literature. It is only those reports which B.I.S.R.A. itself circulates that are being classified by the ASM/SLA system.

The novel Author Index has obvious limitations. No provision is made for distinguishing between A. Smith and B. Smith for example, and if more than one author's names are punched some of the selectivity of a direct index is lost.

Unwanted cards also constitute a certain limitation, particularly in the Author Index, but even with our very limited experience in operating the system we have found that a little thought before commencing to needle through the cards often reduces the number of unwanted cards by a large proportion. If one is searching for one particular card it is useful to remember that as four indexes are combined on each card it may be possible to obtain the wanted card very quickly by needling, say, through one letter of the author's name, then a particular material or process or a particular common variable.

Conclusion

We feel that the ASM/SLA classification will meet our special requirements as a Research Association and it is surprising how few have been the additions which we have so far made to the Processes and Properties Index. The cheapness of installing the system and the very low running costs commend themselves to small organizations. That staff with very little technical knowledge are being trained to use it is also noteworthy.

Acknowledgements

I am indebted to my colleague L. H. Miller who has spent much time investigating systems of classification used by a number of organizations and to Miss Marjorie Hyslop, Secretary of the ASM/SLA Literature Classification Committee, who has given us much assistance both before and after we decided to adopt the Committee's system.

SOME PRACTICAL POINTS ON THE UTILIZATION OF TECHNICAL PERIODICAL LITERATURE WITH SPECIAL REFERENCE TO AMERICAN PUBLICATIONS

BY J. G. HALL

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Engineering Group : Symposium on 'Snags I have struck'.

AMERICAN periodical literature constitutes a vast storehouse of technical information—a storehouse which can only be fully utilized when one is aware of the peculiarities and limitations which characterize it. In addition there are certain tricks of the trade, certain short cuts which facilitate the effective exploitation of this reservoir of information.

Chemical Abstracts, issued by the American Chemical Society, and the annual volumes of *Engineering Index* together cover a very large proportion of the world's technical literature, including in their purview a field of interest much wider than is strictly indicated by their titles. In addition both include comprehensive lists of current technical periodicals, giving such details as frequency and place of publication.

The key to the exploitation of technical periodical literature is the effective use of indexing and abstracting services.

The extent to which the field of knowledge is covered by indexing and abstracting services has been surveyed by Dr. H. J. T. Ellingham in the *Report of the Royal Society's Scientific Information Conference*, 1948, pp. 477–484. It is suggested that, when the appropriate selection of abstracting and indexing publications has been made from this survey, it is advisable to locate a set of each of these which is available for reference. The reasoning behind this suggestion is that such publications are expensive to purchase ; e.g. *Chemical Abstracts* and *Engineering Index* cost £24 per annum each, and it is frequently necessary to consult volumes earlier than those in one's own collection. Also an engineering information service will frequently need to consult abstracts in allied fields ; *Corrosion Abstracts*, *Physics Abstracts* and *Electrical Engineering Abstracts*.

It is necessary when using abstract publications to appreciate the time lag which may exist between the publication of the original article and the appearance of the abstract—most articles appearing in the last four months of the year will be found in the following year's abstract publications.

The checking and quoting of technical references can be greatly facilitated by familiarity with the peculiarities in make-up which characterize so many technical journals and with the publishing practices of technical societies. The following examples will provide an indication of some of the variations and difficulties which may be encountered in this direction.

Journals which carry independent pagination for each issue, necessitating reference to date or no. of issue in addition to volume and page.

Journals which carry their contents pages in unconventional positions.

Journals carrying text material on advertisement pages, which calls for special attention at binding. Such material often does not appear in annual indexes and is missed by abstracting services.

Journals which provide their annual indexes, etc., in unconventional forms. (A.S.M.E. *Society Records*, issued as Part II of the January *Transactions*, contains the annual indexes to *A.S.M.E. Trans.*, *Journal of Applied Mechanics* and *Mechanical Engineering*.)

The practice of combining extensive summaries of several papers under a single heading or title which does not adequately indicate the material covered, can often cause difficulties, as also do papers with inadequate or misleading titles.

Papers presented before societies which only issue proceedings at extended intervals are frequently published in full or in adequate summary form in other journals very shortly after presentation.

Papers presented before some organizations are only available in preprint form, or not at all, e.g. some A.S.M.E. papers and papers presented before certain divisions of the American Chemical Society—Gordon Research Conferences. Practice is growing of publishing papers in summary form and indicating source and availability of full supporting material.

Practice of forward quotation can also occasion difficulties; items included in bibliographies as 'to appear in future issues of—'; bugbear of private and verbal communications as references.

Conferences, congresses and symposia frequently present difficulties by reason of the variety of publication media used. The series of Symposia on Combustion held in the United States during the period 1928 to 1952 provides an interesting example. The proceedings of the first appeared in *Industrial and Engineering Chemistry*, vol. 20, 1928, the second in *Chemical Reviews*, vols. 21, 22, 1937–8, the third held in 1948 appeared as a separate work in 1949 and the fourth held in 1952 is at present only available as abstracts of papers.

The above notes emphasize the value of the compilation of a list of special features of periodicals within one's own field.

In conclusion mention may be made of the practice of certain German abstracting agencies who send reporters to meetings where important papers are presented. They prepare abstracts from the actual presentation with the result that abstracts appear of papers which have not reached publication stage.

...posium on 'Snags I have struck'.

HANDLING AND CLASSIFYING TRADE CATALOGUES

By MRS. J. D. HOOLEY

Librarian, Kellogg International Corporation

Summary

ON appointment as librarian, the author took over 1,500 trade catalogues in addition to the usual library stock. The catalogues had been stored on shelves, loosely inserted in Manila folders, a system which proved hopelessly inefficient. It was necessary to continue to use the shelving but, because of the varying size of the catalogues, box files would be wasteful of space. The existing classification was in alphabetical order according to firms, subdivided by numbers, but failed when a subject approach was needed. Lastly, there was the problem of keeping the catalogue collection up to date. The author asked :

- (1) What is the best method of storing trade catalogues in a limited space ?
- (2) Is there a method of classification of trade catalogues which would eliminate the necessity for an additional subject index ?
- (3) What is the best way to set about the task of bringing the catalogues up to date ?

OBTAINING INFORMATION FROM INQUIRERS

By M. GOYER, PH.D.

Librarian, Ministry of Supply, R.A.E./Rocket Propulsion Dept.

Summary

ONE of the difficulties in supplying readers with information is that the readers themselves sometimes only vaguely know what they want.

Requests for specific references appear easy, but some readers, untrained in library techniques, appear to think that reports, books, etc., are classified by colour, shape or size. Moreover, it has been found that each of the variables in the request data (e.g. author, journal, column, number, date, etc.) is subject to errors of 100 per cent. or more. For this type of aberration it is difficult to find a cure, as it seems to be caused by the peculiar mental make-up of the scientist and technician. These suffer under the delusion that they have wonderfully accurate memories, whereas, in fact, they are endowed with extraordinarily fertile imaginations.

Requests for information on specific subjects may be made less troublesome by applying the advice given in a South African journal, 'Tell your librarian all'. It has proved helpful to find out from a technician-inquirer why he wants the information, how much he already knows, and where he obtained that previous information. These clues decide how a further search should be organized.

SNAGS WITH JOURNALS AND PERIODICALS

By H. W. WORRALL

D. Napier & Son, Ltd., Flight Development Establishment

Summary

CERTAIN snags arise when trying to stack periodicals in a neat way so that the volume and number are visible and a particular issue is easily located. Where possible the following should be made standard on the spine, reading from right to left : month, year, title, volume number and/or part number. Where this is not possible the date should be printed on both front and back covers to assist in location.

One of the most awkward snags with periodicals is lack of uniformity with regard to size ; some standardization would facilitate stacking problems, filing torn-out sheets from spare copies, and neatness in binding. The next snag is the practice, mainly American, of breaking up an article with pages of advertisement matter. It is suggested that advertisements should be kept apart from the articles ; moreover, an index of trade advertisements should be made compulsory in all periodicals.

Indexes vary in form and can be by subject, alphabetically or by author. Very rarely is there a happy combination of all three types. Publishers should never charge extra for an index.

Finally, the greatest snag of all, how can periodicals be circulated so that all concerned can read them in reasonable time ?

THE WIDE FIELD OF AERONAUTICS

By F. E. SMITH

Librarian, Royal Aeronautical Society

Summary

ALTHOUGH the job as librarian of the Royal Aeronautical Society is relatively simple, one does have so many different *types* of client.

It would be difficult to find another library in which modern science and history are such close bedfellows. The history of aeronautics seems to fascinate more people than any other subject known to the writer. Hardly a week goes by without an inquiry that involves chasing through dusty volumes of old journals or the standard works of aeronautical history.

A representative library of modern material also has to be maintained. It has to cover all aspects of aeronautics and this means ranging from aerodynamics, with its applications to balloons, gliders, aircraft and supersonic missiles, through the practical side of aircraft structures on to the production, metallurgy, engines, economics and so forth of the whole aeronautical gamut.

SYMPOSIUM ON THE NATURE AND SCOPE OF FUEL AND POWER LIBRARY AND INFORMATION SERVICES IN THE UNITED KINGDOM

Mr. Frank Hickman, Chief Librarian, Ministry of Fuel and Power,
acted as Chairman for this session.

SUMMARY REPORT

THE period available at the conference for the discussion of the Fuel and Power Group's Symposium¹ proved far too short for conclusive debating of the many ideas and opinions expressed. Generally, it was agreed that the Symposium was practical and revealing and formed an excellent basis on which to build a truly representative and informative guide to the Fuel and Power documentary services in the United Kingdom. Such a guide, or review of resources of organizations within the ambit of the Aslib Fuel and Power Group, was recommended for investigation by the Group Committee, which might give consideration to arrangement under (a) organizations predominantly concerned with fuel and power, and (b) organizations concerned incidentally with fuel and power. This recommendation emerged from discussion of a viewpoint that a clear definition of fuel and power was essential to practical limitation of the Group's membership and area of activity. Mr. V. Biske proposed that a suitable working definition might be taken from Article 1 of *The census of production* (1954) (*Returns and Exempted Persons*) Order, 1953. (S.I. 1953, No. 939) :

'An undertaking in the field of production of coal, gas, electricity, oil shale, crude or refined petroleum or shale oil products.'

Some support was shown for the views that a Petroleum sub-group was needed to serve more closely the interests of representatives in this branch of Fuel and Power, and that the diversity of classifications revealed by the Symposium justified exploration of the possibilities for compilation and adoption of a standard Fuel and Power scheme.

The Chairman agreed that matters such as these should be referred to the Group Committee. Those present at the session agreed to amplify statements included in the Symposium or to provide statements for the first time.

¹ Available from the Aslib office as a preprint, 2s. per copy.

AN EXHIBITION OF BOOKS AND LIBRARY EQUIPMENT

The first six firms played a double rôle at the Conference. They addressed the Sunday morning session and participated in the general exhibition.

ADDRESSOGRAPH-MULTIGRAPH, LTD., demonstrated offset reproduction on their multilith duplicator, a completely automatic machine designed for use in the office by non-technical operators. Anything from a visiting card to a complete catalogue in colour can be produced with ease and speed. Paper or metal duplicating masters are easily prepared by typewriter, crayon, pen, pencil, brush or carbon tracings and give faithful reproduction. Photographic aluminium masters will produce half-tone and line illustrations, text matter in standard type faces and all work within the scope of offset lithography.

LLFORD, LTD., demonstrated their Azoflex process, originally known as Retocce and developed by Van der Grinton in Holland. Diazo materials are used throughout. To create a master from a double-sided original, a diazo foil containing a fine screen is used by the reflex method. From the foil master, subsequent prints are made on diazo paper. The apparatus available ranges from simple stationary machines to fully automatic models, designed for large output. Since the foil is expensive the initial cost is high, but subsequent costs are low in comparison with normal sensitive paper costs.

KATE'S ROTAPRINT, LTD., demonstrated three offset litho-duplicating and printing machines. All models are fitted with the patented Rotafount method of damping which completely eliminates the use of damping rollers.

Rotaprint equipment is in use throughout the country with Government offices, local authorities, and industry generally. Even the smallest model (R.70) is capable not only of running off first-class duplicated matter, but also leaflets and brochures with the inclusion of half-tone illustrations and colour. The two larger models, R.40 and R.30/90, are built to offer hairline register, and are extremely popular in all fields of print due to simplicity of operation and very high standard of reproduction.

OZALID Co., LTD., exhibited equipment capable of the production of copies of books or single-sided or double-sided documents of all kinds. This equipment is a versatile and low priced form of document copying and its capabilities allow the production of positive single-sided and double-sided copies in a minute and a quarter, and also the production of transparent masters for subsequent positive dry developed diazo copies.

The second method is by far the cheapest in existence where production of more than one or two copies is required. No darkroom is required and the equipment can be housed on an office table. Neither process requires open trays of chemicals and the copies need no washing or other wet processing.

PHOTOSTAT, LTD., demonstrated the 'Photostat' machine and the new processing techniques of 'Duostat' autopositive document paper for reflex and contact printing.

The 'Photostat' fulfils the essential need of simplicity in making photographic copies of all kinds of documents, commercial papers, maps, drawings, blueprints and, in fact, anything written, drawn or printed. Although the process is photographic the machine can be operated without technical skill and in normal office lighting conditions.

The principle feature of 'Duostat' paper is that it gives a positive copy—black lines on white paper—in one step. A great advantage is the ability to increase contrast beyond that of the original so that good reproductions can be made from faded originals. A new method of semi-dry rapid processing has been introduced to simplify the production of photographic copies with 'Duostat', thus eliminating the use of a darkroom or developing apparatus.

REMINGTON-RAND, LTD., exhibited 'Dy-flex' photo-documentation equipment, in which a combination of processes is employed that enables an inexpensive dye-line copy to be made from practically any type of document. The 'Dy-flex' unit incorporates an exposure and semi-dry processing apparatus that enables copies to be made from any opaque, double-sided or thick document at a minimum cost, on direct-copy

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medium, which is a thin but strong translucent reversal material that produces an immediate positive. From copies made in this way, dy-prints can be produced at an even cheaper rate on the same equipment, using an automatic developing machine which is incorporated. The equipment will make copies up to 13 in. × 16 in. in size and has a compensating exposure apparatus by which it is possible to make copies of books up to about 2½ in. thick at the opening. Both the direct-copy medium and the dye-line papers employed are what is termed as 'slow', and they can be handled comfortably without fear of deterioration in normal office lighting.

BAILEY BROS. & SWINFEN again displayed a cross-section of their stocks of books for special libraries. These included volumes in all the main fields, dictionaries, and publications of the Special Libraries Association, F.I.D., the North-Holland Publishing Co., the American Association for the Advancement of Science, and the American Management Association.

They specialize in periodical subscriptions: these are always carefully recorded, and renewed annually without interruption where desired. Odd numbers are also supplied, alternatively, photostats of special papers.

BENN BROTHERS exhibited their journals and directories, which cover a wide range of commercial and scientific undertakings, and present an essential information service to the industrialist in their particular fields. Their associated company, Ernest Benn, played new and recent books of interest to the special librarian. These were divided into three sections: scientific books, which in the main deal with various specialized branches of engineering; technical books, which range from statistics and indexing to the law of patent; and commercial books, which deal very fully with the timber trade and include a new book on hire-purchase accounts. Catalogues and prospectuses giving full details of all journals, directories and books were available.

THE BRITISH NATIONAL BIBLIOGRAPHY needs little introduction to the British librarian. Sponsored by Aslib and other leading organizations concerned with British literature and scholarship, its reputation is well known. The specialist librarian may not be aware of the extent to which it can help him in book selection, cataloguing and classification and in reference work on his marginal subjects. The full service consists of weekly lists of current publications classified by the Dewey Decimal Classification, quarterly cumulative catalogues and an annual volume. It lists hundreds of pamphlets not regularly recorded elsewhere, and gives a detailed analysis of the subject of every work, providing a basis for cataloguing and classification. The British National Bibliography is edited at the British Museum and published by the Council of the British National Bibliography, Ltd.

CEDRIC CHIVERS, LTD., exhibited a full range of bindings for journals and reference books as well as examples of restoration work, mounted and repaired maps and documents, and all types of fine bindings. Also on display were specimens of the various stages in the binding of a book.

Of special interest to librarians were the patented 'Quickseen' magazine cases now in use in many libraries at home and overseas. This type of case has a transparent front board of perspex through which the publisher's cover of the periodical is clearly visible, and was selected by the Council of Industrial Design for exhibition at the Festival of Britain.

CONTOURA PHOTOCOPYING, LTD., exhibited models in three sizes—quarto, foolscap and brief-size (18 in. × 14 in.)—and in two intensities of light source, for reflex document paper and auto-positive paper respectively. The special feature of Contoura photocopiers is the use of a translucent air-filled cushion or pressure pad. Demonstration indicated how this cushion enables copies to be taken without difficulty from any type of original, including bulky books. It was seen that a Contoura is an all-purpose photocopier which can claim to be efficient, ingenious, portable and inexpensive, enabling photocopying to be applied to new purposes or, alternatively, freeing all units from dependence on the photocopying facilities of other or parent organizations. The demonstration included processing in order to show how little technical knowledge is required to do it successfully.

COPELAND CHATTERSON CO., LTD., demonstrated the Paramount hand-operated punched-card sorting system for maintaining abstract and general reference cards where an analysis of subjects, authors, source and year of publication are required. Thousands of cards can be handled per hour by one operator so that individual items or groups of information can be selected. The system is simple to operate and standard cards are available which cover many needs in this field of analysis.

A further exhibit was the Visible Strip Index, in which as many as 300 strips can be seen at a glance and which can be supplied in various heights and widths.

CREED & CO., LTD., the Croydon telegraph engineers, exhibited their new 'Desk-Fax' facsimile intercommunication system. With this new instrument, hand-written or typed messages, signatures, diagrams and like material can be sent and received between offices connected by an ordinary telephone wire. The 'Desk-Fax' makes no demand on the services of a skilled operator as the sender simply places his message around a drum and presses a button. Just over two minutes later a permanent facsimile of the message is reproduced at the distant point, whether it be in the same building or several miles distant. Easy to install and requiring less desk space than an ordinary office typewriter, the 'Desk-Fax' promises to find almost unlimited application wherever the need arises for the speedy, accurate interchange of written or graphic matter.

THE DEPARTMENT OF SCIENTIFIC AND INDUSTRIAL RESEARCH use a number of mechanical display devices as aids in publicizing technical information. The information is made more effective by drawing attention to it through the use of movement and sound. The display consisted of books, photographs, drawings, script, models, etc.

Members were interested to see some of these devices which are both reliable and flexible in scope. Machines for showing a series of photographs and special devices for presenting a recorded commentary synchronized with illuminated pictures or drawings were demonstrated.

DUNN & WILSON, LTD., appointed binding agents for the *British Medical Journal* and the *National Geographic Magazine* of America, showed a comprehensive range of bindings suitable for all types of periodicals and journals for technical and reference libraries. The binding service offered maintains the highest possible standard of workmanship at economical prices and is guaranteed to give complete satisfaction. The exhibit was of much interest to all technical and reference librarians as, in addition to the bindings, periodical cases and materials used were also on view.

KALAMAZOO, LTD., exhibited an indexing method suitable for cataloguing work, lists and indexes of every kind. It is compact and portable and gives immediate reference to any item and is always 'clean' and up to date.

A new loose-leaf binder for current records was also demonstrated. This binder, the Kalamazoo Model S, gives complete security for records, yet they can be changed in a quarter the time taken with a normal keywound binder. The Kalamazoo posting box, designed to house confidential records, and a new adjustable catalogue were also on view.

KODAK, LTD., exhibits included the Recordak Micro-file camera model A.H., which copied a variety of documents, such as books, ledgers, newspapers, etc., on to 35 mm. film, at a reduction of from 18:1 to 8:1. It is designed for use on an ordinary table or desk. Controls have been made as simple as possible, so that the unit can be used efficiently by staff without specialized knowledge of photographic procedure.

The companion unit is the Recordak Library Reader Model A.H.3. The reader incorporates a simplified lens change mechanism, whereby one of two lenses can be brought into use by the mere turning of a knob, providing alternative magnifications of 12:1 and 24:1. Other features include a rotating head, so that images can be placed in a correct reading position—a scanning device and a heat absorbing filter to prevent damage to the films.

LANGE, MAXWELL & SPRINGER, LTD., exhibited a wide range of scientific books and periodicals, in particular those published by Springer Verlag (Berlin, Goettingen, Heidelberg), Springer Verlag (Vienna) and Urban & Schwarzenberg (Munich, Berlin) and also Pergamon Press (London). Lange, Maxwell & Springer, Ltd., who specialize in scientific and medical books, are in a position to obtain any current medical publication from practically every part of the world. They also maintain a first-class research

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service, well equipped for the procurement of out-of-print publications, and will gladly answer inquiries regarding any book or periodical.

MAXSONS BOOKBINDING CO., LTD., who are an associated company of Lange, Maxwell & Springer, exhibited the various stages involved in bookbinding work.

LAWES RABJOHNS, LTD., exhibited the Monex office copier, which is the latest step forward in reproducing from translucent, opaque or double-sided originals on to diazotype (dyeline) materials. From 200-400 copies per hour, according to the originals, can be reproduced on the machine, which fully processes the material—exposing, developing and drying on a rotary process. Originals up to 16 in. width, and any length, can be copied in a matter of seconds on to inexpensive Monex positive process materials. In the range of this process, there are more than twenty various types of base materials, so that copies can be produced to suit systems which are already in existence. This Monex process utilizes the semi-dry method of developing, and, therefore, has no fumes. Whilst the diazotype process normally requires a translucent single-sided original, copies from opaque or double-sided originals can be produced by exposing Kodak autopositive materials in the same machine, but processing on the new Duostat processor. From this, an unlimited number of Monex dyeline copies can then be made.

LUXFER, LTD., exhibited the Snead standard type bookstack, which is designed for libraries where superiority of finish and architectural appearance are of importance. They also showed the bracket stack, which is the most efficient and economical form of bookstack obtainable. The periodical stack shown will accommodate twice the number of journals compared with the normal stack. Photographs of installations were on view.

REMPLOY, LTD., was formed in 1945 to provide employment for severely disabled persons, and to-day some 6,000 men and women who are unable to obtain employment in open industry are working in ninety Remplov factories throughout the country.

The bookbinding and printing group undertake the following work: library bindings (sewn or unsewn), scientific and technical journal binding in full cloth, quarter, half or full bound leather; printing, both commercial and letterpress, pamphlets, brochures, colour printing, etc., account book and stationery bindings, loose leaf systems, ruling, etc. Factories in the bookbinding and printing group are situated at Newcastle-under-Lyme (Staffs), Stockton-on-Tees (Co. Durham), Neath (South Wales), Halifax (Yorks), Barking (Essex), Printing Works, Manchester (Lancs).

RONEO, LTD., demonstrated their '500', Series II, Duplicator with fully automatic single-cylinder inking which gives many more copies to the pound of ink and clean colour-change in twenty-five seconds. The Roneo '500' demonstrates reproduction of bookplates, forms, cards and headings from the new Electronic stencil, a development which raises the whole standard of stencil duplicating. The Roneo '150', a handy portable duplicator, was also demonstrated.

Further exhibits included the Roneo 'Visible-80' filing system, ideal for rapid filing and finding, and the application of Roneodex visible records to indexing and classifying.

SISSON & PARKER, LTD., of Nottingham, exhibited an interesting and very comprehensive selection of technical and scientific reference books. Their display included specialists' books on all subjects covering scientific management, administration and industrial welfare, as well as titles from leading American publishers. Books are sent on approval in most cases.

A. WEST & PARTNERS, LTD., exhibited the prototype of their microcard reader, using a 5 in. x 3 in. microcard with 96 images. In this apparatus an intense beam of light is directed on to the appropriate image required to be read, and the reflection magnified and projected on to a white opaque screen approximately original size or over. The card is moved by an easily adjustable carriage to select the appropriate page to be read.

Also shown were examples of 35 mm. microfilm of various subjects, such as old manuscripts, newspapers and documents, which the company produces for clients in their own laboratories, or in the clients' own offices.

A further exhibit was a selection of UNO pen stencils suitable for lettering up binary notices and indexes, together with an appropriate office outfit board to facilitate lettering on 5 in. x 3 in. cards and other small work.

NAMES AND ADDRESSES OF EXHIBITORS

- Addressograph-Multigraph, Ltd., 20 Kingsway, London, W.C.2. TEMple Bar 8474.
- Bailey Bros. & Swinfen, Ltd., 46 St. Giles High Street, London, W.C.2. CHAncery 7606.
- Benn Brothers, Bouverie House, Fleet Street, London, E.C.4. CENTral 3212.
- British National Bibliography, The British Museum, London, W.C.1. LANgham 5846.
- Cedric Chivers, Ltd., Portway, Bath. Bath 7355.
- Contoura Photocopying, Ltd., 56-60 Islington Park Street, London, N.1. CANonbury 6190.
- Copeland-Chatterson Co., Ltd., Exchange House, Old Change, London, E.C.4. CITY 2284.
- Creed & Co., Ltd., Telegraph House, Croydon, Surrey. Croydon 2121.
- Department of Scientific and Industrial Research, 5-11 Regent Street, London, S.W.1. WHItchall 9788.
- Dunn & Wilson, Ltd., Bellevue Bindery, Falkirk, Scotland. Falkirk 1591-2.
- Ilford, Ltd. (Azoflex Department), 104 High Holborn, London, W.C.1. HOLborn 3401.
- Kalamazoo, Ltd., Northfield, Birmingham, 31. Priory 1101.
- Kaye's Rotaprint Agency, Ltd., Rotaprint House, Honey Pot Lane, London, N.W.9. COLindale 8822.
- Kodak, Ltd. (Recordak Division), Adelaide House, London Bridge, London, E.C.4. MANsion House 9936.
- Lange, Maxwell & Springer, Ltd., 242 Marylebone Road, London, N.W.1. AMBas-sador 3421.
- Lawes Rabjohns, Ltd., Abbey House, Victoria Street, London, S.W.1. ABBey 1542.
- Luxfer, Ltd., Waxlow Road, Harlesden, London, N.W.10. ELGar 7292.
- Ozalid Co., Ltd., 62 London Wall, London, E.C.2. MONarch 9321.
- Photostat, Ltd., Adelaide House, London Bridge, London, E.C.4. MANsion House 8226.
- Remington Rand, Ltd. (Remflex Division), 1-19 New Oxford Street, London, W.C.1. CHAncery 8888.
- Remploy, Ltd. (Bookbinding and Printing Group), 108 Portland Street, Manchester, 1. CENTral 4136-7.
- Roneo, Ltd., 17 Southampton Row, London, W.C.1. HOLborn 7622.
- Sisson & Parker, Ltd., Wheeler Gate, Nottingham. Nottingham 43531.
- A. West & Partners, Ltd., 4 Abbey Orchard Street, Victoria Street, London, S.W.1. ABBey 3323.